



MODIFIED ATKINS DIET FOR THE CONTROL OF SEIZURES

Do NOT undertake any kind of Ketogenic/Atkins type diet without Medical Supervision especially if you are taking Anti-Epileptic Medication as well. Matthews Friends cannot be held responsible if you do not heed this warning and your health could seriously be at risk.

With the awareness of the Ketogenic Diet being used for intractable epilepsy for children now growing in the UK, obviously adults who have experienced problems/side effects/loss of seizure control with their AED's are also coming to Matthews Friends and asking whether the Ketogenic diet would be useful for them.

There is evidence that some adults may respond well to the diet but compliance proves very difficult, as it is just too restrictive for us grown ups to adhere to! However, with the modified Atkins diet working in similar ways to the Ketogenic diet by restricting carbohydrates and putting the body into ketosis BUT being far less restrictive than a full blown ketogenic diet, this is an option that could be explored not only for adults but also for older children and teenagers. The difficulty is that without medical evidence some doctors may dismiss it or not take the option of using it seriously.

Thankfully someone is exploring this avenue and is helping prove to the medical establishment that it IS an option that should be looked at. It is very early days at the moment, but initial signs are looking good and Dr. Eric Kossoff from Johns Hopkins in Baltimore continues his work with the modified Atkins diet and has kindly supplied us with the following information in relation to the Atkins work he has done as well as other information on this subject that he has gathered. This section will be updated as his work continues. Dr. Kossoff strongly advises anyone doing the diet, be it a young child or an adult, to do this under the supervision of either a neurologist or a dietitian familiar with the use of dietary therapies for epilepsy.

The following is from excerpts of a manuscript that was given by Dr. Kossoff at the German Fulda Meeting 10-12th January 2007.

Since first reported in 2003 by our centre, the use of a modified Atkins diet has emerged as a viable dietary treatment for seizures. The term "modified" describes the lower carbohydrate limit compared to Atkins recommendations (10 grams per day versus 20 grams per day) and the

encouragement of high fat foods. It was recognized initially by parent and later by physician investigation, that restricting carbohydrates in combination with eating typical high-fat ketogenic foods could induce ketosis and reduce seizure frequency, without any protein, fluid, or calorie restriction as would be done on the ketogenic diet. In addition, this diet does not require an admission or a fast. In reviewing food records of children on this diet, it approximates a 1:1 ratio of fat: carbohydrate and protein, compared to a typical 3:1 or 4:1 ketogenic diet. Low carbohydrate foods and meals can also be eaten in restaurants, making the diet more accessible and “portable”, especially for adolescents and adults. Although this diet has not shown to be “easy”, it is probably “easier” than the traditional ketogenic diet.

A small case series of 6 patients aged 7 to 52 years was the first report of this diet in 2003. Five maintained at least moderate ketosis and three achieved greater than 90% reduction in seizures. Interestingly, half of the patients were over age 18 years.

A follow-up study of 20 children with intractable seizures started prospectively on the modified Atkins diet using a set protocol was published three years later (February 2006), starting children on 10 grams of carbohydrates per day and encouraging fats. Two-thirds of children demonstrated greater than 50% reduction in seizures with half of these children having a greater than 90% reduction. Four became seizure-free. Large urinary ketosis was attained within four days in all children, and tended to trend downwards over time, yet did not typically lead to loss of efficacy. Nine children were able to reduce anticonvulsants. The diet was well tolerated, and most children chose to remain on the diet after the 6-month study was completed. Blood urea nitrogen increased significantly and total cholesterol trended upwards from 192 to 221 mg/dL (although this was not statistically significant). Weight loss was infrequent, except in a few children who were overweight to start.

A second randomized, crossover study of 20 children has just been completed, and was designed to evaluate carbohydrate allowances of 10 and 20 grams per day in terms of efficacy and tolerability. Early analysis appears to demonstrate that 10 grams per day as an initial starting point is most effective at the 3-month point, but after that, the carbohydrates can be liberalized to 20 grams per day without loss of seizure control.

Perhaps most excitingly, a study of the modified Atkins diet for 30 adults with epilepsy has also been completed at our institution and results were presented at the 2006 American Epilepsy Society annual meeting. In this prospective study, 47% of adults aged 18-53 years having at least a 50% reduction in seizures after 3 months. The mean weight loss was 6.8 kg. over a 3-6 month period, and was a welcome “side effect” for many overweight adults. Total cholesterol increased from 187 to 201 ($p=0.05$), but triglycerides, HDL and LDL cholesterol did not change. Despite the efficacy and beneficial effects on obesity, the diet was likely more restrictive than in children, with slightly less than half of patients completing this study. However, all adults with a significant response to the diet were improved by 2 months, and

considering the evident restrictiveness of this approach, we now recommend adults discontinue the diet if not successful after this time period.

What is the future of the modified Atkins diet?

I foresee it in three main categories, as I'm not convinced yet it will replace (or does it need to) the ketogenic diet. First, will be its use for adolescents and adults. In 2007, nearly all children above 12 years are started on the Atkins diet now at our hospital. Second, I believe this diet will be used in situations where a child has been on the ketogenic diet for many years and would like to make it more palatable as they become teenagers. Lastly, the modified Atkins diet may find a place in the treatment of epilepsy BEFORE medications, if it is shown to be easier to do. This would obviously be exciting.

Dr. Eric Kossoff.

Below are some links that you might also find useful regarding the modified Atkins diet. These are American sites but with some useful information on them that can benefit all of us. In addition, you can feel free to contact Dr. Kossoff directly at ekossoff@jhmi.edu with brief questions if you have any.

http://www.epilepsy.com/epilepsy/treatment_atkins_diet.html

<http://www.atkinsforseizures.com>

Frequently Asked Questions:

What is the difference between the Ketogenic Diet and the Atkins Diet?

The Atkins diet is less restrictive than the Ketogenic diet (KD) in so far as it doesn't restrict protein, fat or calories and therefore you don't have to do as much weighing out (only having to weigh out carbohydrates). The diet is not worked out to any set ratio as with the Classical diet and you don't have to give a percentage of the meal in the form of a liquid fat supplement as you do with the MCT diet.

The Atkins diet refers to 'net carbs' what does this mean?

Net carbs is the total carbohydrate in a food MINUS the fibre content and any sugar alcohol content. Atkins say that these two things do not have any effect on the Blood Glucose levels so therefore you don't have to count them as carbs and can deduct that amount from the total carbohydrate content.

With the modified version of the diet Dr. Kossoff uses, once again fibre is free, but he is very cautious about the sugar alcohols, especially for some of the processed foods where the sugar alcohols seem very high, such as the

chocolate and sweets that are available. This would be something you would need to discuss with your dietitian.

Can I use all the Low Carb products that are available?

This again is a matter that you would need to discuss with your dietitian. Some are very useful whereas others we would tend to urge caution.

Matthews Friends has tested a lot of low carb products and 'carb free' products, (all for research purposes obviously!) especially the chocolates and sweets and a word of warning, do not eat very many or you could suffer with awful stomach ache and lots of visits to the loo! Be especially careful when giving them to your children and make sure you restrict their use – believe us when we say that it was incredibly painful.

We have had some families that have used them just for Christmas, Birthdays and Easter time as a very special treat but their use has been restricted and the children have been carefully monitored to see if there were any changes. Some children were able to have them and unfortunately for some others, it did affect their ketones and they could no longer use them. It is one of those situations where it may be trial and error – but we do suggest that before you try anything new – discuss it with your dietitian.

When should I ONLY use the ketogenic diet (not modified Atkins)?

Dr. Kossoff suggests that children who are gastrostomy tube fed (in which a ketogenic diet formula is easily available) or infants (in which we worry a bit more about being exact about their nutritional status) should only go on the ketogenic diet. In addition, a family that requires a bit more dietitian guidance (for whatever reason) might find the modified Atkins diet too "open-ended" and "free". Someone who is a more "emergency" situation (e.g. infantile spasms, status epilepticus, etc.), Dr. Kossoff will generally go with the "gold standard" ketogenic diet rather than potentially try something less strict and possibly less efficacious.

Should I switch from one to the other?

The modified Atkins diet and ketogenic diet are more alike than different, according to Dr. Kossoff. There is good evidence that children on the ketogenic diet for many months or years can successfully "lighten" their diet to the modified Atkins without a loss of seizure control. Not every child is the same, but in general, this seems to be true.

The converse (going from modified Atkins to the full ketogenic diet) is more complicated (and also being actively studied). In a way, this move to the ketogenic diet is like increasing the dose of a medication. It is hard to give up on a medication (if there are no side effects) without trying to increase the dose more. The ketogenic diet is like that when compared to the modified Atkins diet. In general, it seems that most children (in Dr. Kossoff's early

experience) do about the same when switched, although will have higher and more consistent ketones with the ketogenic diet. There are, however, some children who do become seizure-free with the ketogenic diet, usually those who were better with modified Atkins, and either seizure control seems to either correlate with ketones (better when higher) or they seem to benefit from calorie control. This is a very important (and tough!) decision to make and should be carefully considered with your doctor, dietitian, and your child!

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