

Diet and AD/HD

Bryan Goodman, MA, chats with L. Eugene Arnold, MD, MEd

FOOD CHOICES ARE AN IMPORTANT PART OF ENSURING OUR OVERALL WELL BEING. But what role does diet play for those affected by AD/HD? We've certainly heard a lot about food additives, dyes, and the increase of unhealthy food. Science tells us that AD/HD is a neurobiological disorder that is largely impacted by genetic factors. But does that mean that the food we eat doesn't influence how hyperactive and attentive we are? Do parents of children with AD/HD and adults affected by the disorder need to think about nutrition during treatment? For answers to these questions, Bryan Goodman, MA, talked with L. Eugene Anold, MD, MEd, a researcher of international renown.



L. Eugene Arnold, MD, MEd

A member of CHADD's professional advisory board and the editorial advisory board of

Attention magazine, Arnold is professor emeritus of psychiatry at Ohio State University. The author of nine books and more than 160 articles in professional journals, he is particularly interested in alternative and complementary treatments for AD/HD. Arnold has been involved in numerous studies involving AD/HD, most notably the National Institute of Mental Health's Multimodal Treatment Study on AD/HD.

Many people out there think that if people had better diets, there would be a lower incidence of AD/HD. Could you talk a little about what the research tells us about eating habits and AD/HD? Is there any link?

There is no doubt that diets have changed simultaneously with the rising prevalence of AD/HD, but that does not prove a causal effect. For example, compared to a century ago, diets have more sugar and a much higher ratio of omega-6 fatty acids to omega-3 fatty acids. There have been studies showing that children with AD/HD eat relatively more carbohydrates, including sugar, than others. There also was a suggestion of differences in metabolism,

including insulin. One study found that the normal calming effect of a sugar load (with later rebound) occurred at two hours for normal children, but at one hour for those with AD/HD. One study suggested nitrogen (protein) wasting in AD/HD.

Nutrition in AD/HD is further complicated by the appetite suppression of the FDA-approved medicines for treating AD/HD. Thus it would not be unreasonable to suspect that more attention needs to be paid to nutrition in AD/HD. Finally, some trials of essential fatty acid supplementation suggest a modest benefit.



Bryan Goodman, MA, is CHADD's director of communications and the executive editor of *Attention* magazine.



When I was a child, my grandmother swore that I became more talkative and hyperactive when I ate candy and sweets. As far as I know, I don't have AD/HD. Is it possible that sugar can cause AD/HD-like symptoms in those without the neurobiological disorder?

A study in a regular classroom (children not diagnosed AD/HD) of the effect of breakfast showed the following: Attention deteriorated over the course of the morning regardless of breakfast. (This is consistent with other studies focused on medication, in which the placebo group had deteriorating attention over the course of the day.) Significantly, this deterioration was worse when the children had eaten no breakfast than when they had eaten a breakfast of whole-grain cereal and milk. However, a breakfast consisting of a sugar drink with the same number of calories as the cereal breakfast was even worse than no breakfast, with quicker deterioration of attention.

What does the research say regarding dietary supplements and food elimination? How should we evaluate these forms of treatment for AD/HD?

These are complementary rather than alternative treatments, because they both can be carried out simultaneously with stan-

dard treatment. There are some dietary supplements that are not exactly controversial, such as RDI multivitamin/mineral supplements. For patients who are not eating a balanced diet, perhaps "off their feed" because of medication side effects, it is reasonable to ensure micronutrients with a simple multivitamin/mineral (not "megavitamins"). Other supplements may be controversial, and the evidence needs to be examined for them. A mix of essential fatty acids (EPA, DHA, and gamma-linolenic acid) has been shown in several studies to provide moderate benefit compared to placebo, but studies of single acids have not been positive. Reputable peer-reviewed journals have controlled studies of dietary elimination and food-component challenges that show an effect for some individuals, but professional organizations and federal agencies have been slow to accept these, even skeptical. Food sensitivities do not appear to be a specific problem for most patients with AD/HD, but more recent studies suggest a small effect for all children regardless of diagnosis.

We've heard a lot about food dyes and their contribution to hyperactivity. Would you talk a bit about any research that's been done in this area? There were studies in the

Make Good Nutrition Your Goal

DIET IS VERY IMPORTANT FOR EVERYONE'S GENERAL HEALTH, regardless of whether a person lives with AD/HD. The demands AD/HD places on parents of affected children and adults with the disorder can mean that some dietary sacrifices are made. Think of the disorganized adult who doesn't plan out his or her lunches or the parent who is frantically dashing from meetings with school officials to appointments with doctors and doesn't have time to prepare nutritious meals. Yet, as Dr. Arnold points out, it is important for people affected by AD/HD to focus on what they eat, particularly given the fact that some medications can act as appetite suppressants. What follows are some ideas that will hopefully help you deal with demands of the disorder and life.

Eating well

- 1. Know what healthy foods look like.** Emphasize fruits, vegetables, whole grains, dairy products, and for adults, fat-free or low-fat milk and milk products; include lean meats, poultry, fish, beans, eggs, and nuts. Be sure your diet is low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars.
- 2. Avoid chips, fries and other unhealthful foods** or use them sparingly and to reward good behavior and/or grades.
- 3. Get help from the USDA** with your daily and weekly menus. Visit www.mypyramidtracker.gov.
- 4. Use your menus to develop a grocery list.** Designate a day each week when you plan to go grocery shopping.
- 5. If you are short of time, prepare two different meals, based on USDA recommendations, on Sunday nights.** Divide them up in Tupperware containers and stick them in the fridge. Alternate between them for dinner each night of the week. Pack lunches for you and/or your child the night before. Don't do this in the morning before work or school.

Nutrients are important

If you notice a decrease in appetite, think about following these steps...

- 1. Consult your treatment professional and stay in close contact with him or her.**
- 2. Visit www.help4adhd.org, the website of the National Resource Center on AD/HD** and read the materials on food supplements.
- 3. Think about putting a bottle of multivitamins near your toothbrush** and then take a vitamin when you brush your teeth in the morning.
- 4. Drink a liquid nutritional supplement.** It will be important for you to read the label to make sure that the supplement does have the nutrients you need. Some liquid drinks can be very bad for you. Be selective. Think about paying for these products with money from your medical savings account (also known as flexible spending programs or cafeteria plans).
- 5. Make your own milkshake and include omega-3s and crushed vitamins/minerals.**

—Bryan Goodman

United Kingdom that seemed to suggest that there may be something to this. What was their significance?

There were three UK studies on the general population by the group led by Jim Stevenson at the University of Southampton: first in three-year-olds, then a replication in three-year-olds, and then a study in eight- to nine-year-olds. All three studies showed a small but significant effect of certain food dyes and a preservative regardless of a diagnosis of AD/HD. In other words, these chemicals appear to be a problem for the whole population, perhaps with some children more sensitive than others. There are another dozen studies published of significant effect in AD/HD for various food additives, and some negative studies. Although the UK studies by Stevenson's group showed only a small detrimental effect of dyes, the importance is that this applied to the whole population, not just people affected by AD/HD, which increases the public health importance. Therefore the British government has negotiated with food companies to substitute natural colorings for the artificial ones in children's ingestible products. Notably, several American food companies now sell foods in the UK that are free of artificial colorings but continue to color the same products artificially for sale in the United States.



Clearly, diet is important for everyone. Is there anything that parents or adults with the disorder need to think about when it comes to diet and nutrition?

The basic food groups are still the best start. Elimination of chips and fries is advisable for general health even if it does not help AD/HD. If a child's appetite is too suppressed from medication to allow good nutrition, complete nutrition products like nutritional supplement drinks may be useful. One could make a do-it-yourself supplement with a milkshake by mixing in a bit of omega-3 oil and a crushed vitamin/mineral tablet.

Why do you think so many people are willing to spend their time and money on dietary products?

Individual families have found one or another dietary or nutritional strategy useful. Even if it is placebo response, it is useful enough for that individual that they choose to continue it.

Is there any future research planned on this topic? Given other priorities, is this something that is even worth researching?

I hope further research is planned. This promises to be one of the more important opportunities for improvement of general public health, including that of people with AD/HD and other disorders.

What about diet and medication management?

What are some things to think about?

What prescription drugs do to nutritional status is one of the areas needing investigation. We know they decrease appetite, which can make pickier eating and possible unbalancing, but little has been done to investigate what the medications do to nutrient metabolism. We know that some other classes of drugs, such as anticonvulsants, interfere with vitamins B6, D, folic acid, and possibly others. To my knowledge, no study of the effects of AD/HD medication on vitamins has been published. However, there is a teaser published by British investigator Neil Ward in 1990. In an initial small study and then replicated in a larger one, Ward demonstrated that in a group of children with AD/HD whose parents said red dye made them more hyperactive, they had lower serum zinc than a control group, and a red-dye challenge lowered their serum zinc even more and raised their urine zinc. The conclusion was that the dye caused zinc wasting (excessive excretion in the urine). This would increase the requirement for dietary zinc in the presence of red dye. Could the same thing happen with AD/HD medication? We don't have a direct test of that, but we reported some time ago a correlation of amphetamine response with zinc nutritional status. It is possible that the same thing could occur with other nutrients.

You have a great deal of expertise about alternative treatments. You have plans to research neurofeedback.

Would you mind talking a little about what research tells us about neurofeedback and what you hope to find with your study?

We are currently launching a pilot study of EEG neurofeedback to decide optimal frequency of treatment, number of treatments needed to reach a plateau of effect, and feasibility of blinding of placebo treatment for a larger more definitive trial to be undertaken if this shows promise. The literature at this point is promising, with eight partially controlled trials (two of them placebo-controlled), but inconclusive. A treatment this expensive and costly of time and effort needs conclusive evidence before we can recommend it.

Are there other forms of what we classify as "alternative treatments" that show some promise?

Many treatments are being investigated. Most show some benefit in individuals anecdotally. Some have group studies and a few have controlled studies. Certain computer-assisted cognitive retraining programs have shown some promising results. Herbs are also an area worth investigating, although there may be safety concerns; herbs are essentially crude drugs (if they work). Cerebellar training needs some good research; open data look interesting, but only one small controversial study has been published. Closely related is vestibular stimulation, which has had mixed results depending on intensity and whether the otoliths or semicircular canals are targeted. Massage is a cheap, easily applied treatment with some promising controlled preliminary results. There are also encouraging reports of EMG biofeedback with progressive relaxation and of meditation that should be pursued. ●