

## **Children with ADHD Medical vs. Chiropractic Perspective and Theory; Part 2**

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### **ADHD and Diet**

While clinical evidence and small studies suggest that neurological and chiropractic treatment and optometric training may be effective in treating patients with Attention Deficit Hyperactivity Disorder (ADHD) and learning disabilities by providing the necessary brain stimulation, nutrition may be helpful in correcting biochemical imbalances. Unlike medical practitioners, who make an ADHD diagnosis based on a questionnaire, nutritionists send patients to the lab. "Even when patients already have the ADHD diagnosis, we treat them depending on lab results and physical findings," says George R. Moon, DC, DACBN, vice president of the American Chiropractic Board of Nutrition.

Various metabolic processes in the body cause reactions similar to symptoms of ADHD, says Ray Bayley, DC, DACBN: "It can be reactions to allergens, various toxins, or poisoning. Sometimes kids are diagnosed with ADHD because of a nutritional deficiency or amino acid imbalances." Comprehensive blood analysis and digestive stool analysis will show the nutritional profile, including the level of essential fatty acids, says Cindy Howard, DC, treasurer of the ACA Council on Family Practice. "Check for hemoglobin disorders, adrenal stress, and blood sugar levels," she says.

In the early 1970s, Dr. Benjamin Feingold reported that dietary changes in some patients with hives, asthma, or other allergic reactions decreased their behavioral problems. He claimed that 30 to 50 percent of his hyperactive patients benefited from diets free of artificial colorings, preservatives and flavorings, and certain natural chemicals (salicylates in apricots, berries, tomatoes, and other foods).<sup>1</sup> The processed-food industry, many child-behavior experts, and many pediatricians reacted to Feingold's claim with skepticism, pointing out that it was not backed by any controlled studies. Over the next two decades, almost two dozen controlled trials followed, most of which focused on food dyes. Most of those studies found that some children were affected by diet-some slightly, others dramatically.<sup>1</sup>

Young children and those suffering from asthma, eczema, hives, hay fever, or similar symptoms may respond best to dietary therapy. Children who still have significant problems after taking stimulant medications might also be good candidates. But irrespective of the patient's age or the nature of the behavioral problem, it could be worth changing the diet.<sup>1</sup> "Correct diet is never going to hurt," says Toni Ward, MS, DC, DACBN, a former instructor of clinical nutrition at the Southern California University of Healthcare Sciences. "Nutrition affects biochemistry at the cellular level. Sugar and sucrose, food additives, and preservatives are not good for the body, anyway. The body has certain thresholds, and allergies develop when it can't tolerate the doses of allergens anymore. Additives and preservatives are just extra things for the body to digest, so it has to work harder," says Dr. Ward.

Chiropractic nutritionists often deal with ADHD children whose parents don't want them to take stimulant medications. "The most important thing," says Juanee Surprise, DC, DACBN, CCN, president of the ACA Council on Nutrition, "is to reduce exposure to additives and other factors exacerbating the symptoms, and to make sure the child gets good nutrition." "Talk to parents and assess the child's diet," says Dr. Ward. "Remove as many food dyes, sugar, preservatives, and additives from the diet as possible. Instead, focus on natural, mostly organic foods. Determine if there is an allergy-usually starting with dairy and gluten. Try elimination diets-see what results you get. Hyper-activity goes down with this program in most children. They have better attention spans and are not as impulsive."

### **Allergies and Hyperactivity**

The influence of allergies and food sensitivities on behavior is simple-they affect the brain chemistry, says Dr. Surprise. "We can see it in adults-after eating certain foods they get headaches, are tired, irritable, etc. Aspartame (a sweetener) is a big culprit. In some countries, the amount of aspartame used is stated on the label-and there is a set amount food manufacturers are not supposed to exceed."

The myriad of chemicals Americans consume daily includes preservatives (such as BHT and BHA, that are suspected to be human carcinogens,<sup>2</sup> nitrates and sulfites), bleaches, colorings, flavorings, emulsifiers, thickeners, and vegetable gums. "We have more than 3,000 food additives, most of which were never studied," says Dr. Surprise. "The studies that have been done tested the additives separately. They didn't show what happens when the additives are combined in one product." Over the years, people have reported to the Food and Drug Administration (FDA) adverse reactions to aspartame, monosodium glutamate (a flavor enhancer, also contained in sodium caseinate, calcium caseinate, autolyzed yeast, textured protein, yeast food, hydrolyzed vegetable protein, and hydrolyzed protein), sulfur-based preservatives, and tartrazine, also known as FD&C Yellow No. 5 (a food coloring).<sup>3</sup>

Technically, any food can cause a reaction because individuals are biochemically unique, says Maureen Durkin, RN, children's program director at NuBasx, a nutritional medical clinic. "The most frequent allergens are milk, eggs, peanuts, and red food dyes." People are often sensitive to yeast, grains, and corn, says Dr. Moon. Dr. Bayley also observed soy sensitivities in patients. "Some people can't handle excessive manganese from soy, which may cause hyperactivity and irritability," he says.

While some studies showed that food allergies are linked with recurrent serous otitis media,<sup>4</sup> the frequency of otitis media in early childhood has also been connected with later hyperactivity.<sup>5</sup> The connection among the three can be explained through metabolic processes in the body. "At the very least," says Dr. Surprise, "antibiotics that are used to treat chronic ear infections kill good gastrointestinal flora. Antibiotics are often not used properly-and after their use, nothing is done to restore the gastrointestinal flora."

### **Nutritional Deficiencies**

Many research studies link neurological disorders, particularly ADHD, and nutritional deficiencies. Magnesium deficiency was found in 95 percent of ADHD children.<sup>6</sup> In a preliminary but controlled trial, 50 ADHD children with low magnesium were given 200 mg of magnesium per day for six months, after which their hyperactive behavior decreased significantly.<sup>7</sup>

One of the major problems with the modern American diet, says Sally A. Fallon, author of *Nourishing Traditions*, is the inappropriate correlation of harmful and healthy fats-an abundance of trans fatty acids and an insufficient intake of essential fatty acids. "Our ancestors didn't consume trans fatty acids that are known to impair brain-building processes-especially in young children." But essential fatty acids that make up 60 percent of the brain, and which are found in flaxseed oil, seeds, nuts, fish, and fish oil, are not in the food supply anymore, says Durkin. Cod-liver oil is especially effective in preventing and treating learning disabilities, says Fallon.

Research shows that boys with ADHD have significantly lower concentrations of omega-3 and omega-6 fatty acids than control subjects and display characteristic symptoms of fatty acid deficiency, such as thirst, frequent urination, and dry hair and skin.<sup>8,9</sup> Omega-3 fatty acids are vital to the proper function of brain and nerve tissues. Low concentrations of omega-3 fatty acids, or docosahexaenoic acid (DHA) in blood plasma may be associated with increased risk of depressive behaviors. Omega-3 fatty acids are especially critical in infant development. First, the fatty acids are transported from the mother's blood to the placenta. After the baby is born, the primary source of DHA is breast milk. Numerous studies show that breast-fed babies have better brain development than bottle-fed infants, and that they have significantly higher amounts of DHA in their brains.<sup>10</sup> Omega-6 fatty acids that enhance infant visual acuity are not reproduced in infant formula.<sup>11</sup>

### **Supplementation**

Supplementation has become essential for everyone. "Since 1940, our food supply has become very processed," says Durkin. "Fewer people eat locally grown, organic foods. Now manufacturers use food colorings and flavorings to get kids hooked on packaged foods that don't have basic nutrients." People don't eat fish and vegetables anymore, says Shirley Watson, DC, DACBN, CCN, former director of education for the ACA Council on Nutrition. "This means they do not consume enough essential fatty acids and magnesium, both of which help prevent nerve irritability and anxiety. Drinking sodas may cause calcium imbalance-but sodas are sold at schools because it involves big profits."

In patients who don't respond to dietary changes, supplements often will work, says Dr. Ward. "Put the patients on a high-potency multivitamin/multimineral supplement and EPA-DHA essential fatty acids complex. Tyrosine, an amino acid that is a building block for dopamine, is also effective. For proper absorption, tyrosine should be taken with niacin, folic acid, vitamin C, and cop-

per." If depression is involved, it's good to supplement with zinc and magnesium; and if anxiety is a concern, folic acid and vitamin B12 should be used, says Dr. Howard. "To achieve the best results with supplements and diet," Durkin says, "clean up the gut. Constipation is a big problem in ADHD kids."

### **ADHD Causes**

Healthcare experts suggest that ADHD is genetic.<sup>12</sup> It occurs in 35 percent of the extended family population of those with ADHD, but in only 4 to 6 percent of the general population, says Frederick Carrick, DC, PhD, DABCN, president of the ACA Council on Neurology.

But the genetic nature of the disorder doesn't mean that the patients can't be helped or that the disorder can't be prevented, says Julie Bjornson, DC, secretary of the ACA Council on Neurology. "The function of the nervous system is not genetically determined. It adapts to new stimuli, so when we discover what stimuli are needed to correct brain function, developmental delays can be resolved. This is called learning. We are constantly learning because the nervous system can change and adapt." The same holds true for learning disabilities, says William A. Hurst, OD, a world-class learning specialist who has been practicing developmental optometry for 60 years. "A learning disability is not a genetic problem, but a problem of the senses of the body programming the brain."

The rapid increase in neurological conditions in past decades does not fit the genetic profile either, says Robert Melillo, DC, DABCN, whose multidisciplinary clinic in Long Island specializes in treatment of neurological disorders. "All neurological conditions are related to environmental factors, so by identifying the factors and changing them, we can prevent their occurrence. Even if there is a gene involved, some environmental factors must trigger it."

Tracy Barnes, DC, DICCP, Kentuckiana Children's Center board member, says that physical or structural causes associated with ADHD include subluxation, birth trauma, head injury, visual perception problems, hearing deficit, brain asymmetry, neurological disorganization, and cranio-sacral dysfunction.

Use of cigarettes, alcohol, or other drugs during pregnancy may have damaging effects on the unborn child, particularly on the brain. Heavy alcohol use during pregnancy has been linked to fetal alcohol syndrome (FAS), a condition that can lead to low birth weight, intellectual impairment, and certain physical defects. Many children born with FAS show the same hyperactivity, inattention, and impulsivity as children with ADHD. Drugs such as cocaine affect the normal development of brain receptors that transmit incoming signals from the senses and help control our responses to the environment. Drug abuse may harm these receptors and such damage may lead to ADHD.<sup>13</sup>

A possible connection between vaccination and neurological conditions has generated a lot of concern among the public and media. Thimerosal—a preservative containing ethyl mercury—has been used in vaccines and other products since the 1930s. Until 1999, more than 30 vaccines licensed and marketed in the United States, including the vaccines administered to infants, contained thimerosal. Prior to 1991, the only thimerosal-containing vaccine that was recommended for all infants was the whole-cell pertussis vaccine (DTP). In 1991, Haemophilus Influenzae type B (Hib) and hepatitis B vaccines were added to the list.<sup>14</sup>

The 1999 FDA Immunization Safety Review Committee (ISRC) suggested that some infants, depending on the vaccines they receive and the timing of vaccination, may have been exposed to levels of ethyl mercury that could build up to exceed the federal guidelines for methyl mercury intake.<sup>15</sup> Several published reports have associated deficits in language, attention, and memory with prenatal exposure to methyl mercury.<sup>14</sup>

According to the FDA, nearly all vaccines on the recommended childhood immunization schedule are now produced thimerosal-free. But, although diphtheria-tetanus toxoid (DT), tetanus toxoid (TT), influenza, and Pnu-Immune 23 pneumococcal vaccines are not on the schedule, they still contain thimerosal as a preservative and may be given to some children.<sup>14</sup>

## Parents' Responsibility

Doctors of chiropractic can play an important role in the treatment of neurological conditions and their prevention by teaching patients to lead a healthy lifestyle and diminish exposure to environmental factors that can interfere with their children's health. But health and wellness start in the family.

Prevention should start at the prenatal level, says Dr. Moon. "Parents' diets should be corrected at least six months before pregnancy. No pesticides or herbicides should be allowed in foods, and no pesticide sprays in the house. Keep the mold in the house under control." Pregnant women's diets should contain essential fatty acids and magnesium. Taking medications, nicotine, alcohol, and drugs in pregnancy may harm the fetus. Dr. Bjornson suggests that the stress that many jobs bring may affect the unborn baby's health. "A calm and peaceful environment for pregnant mothers is conducive to increased nutritional intake and healthier babies."

The first months and years of a child's life are critical to physical and psychological development. Breast-feeding is the best option-and, of course, breastfeeding mothers' diets are important. "When adding solid foods to the infant's menu, remember that healthy eating habits should be taught from the start," says Durkin. "Do not introduce junk foods or sugar to your children."

When both parents spend more time working than they can spend with their child, the quality of day care becomes of great importance. Seventy-five percent of American children are in early day care, but not all daycare centers can adequately substitute for contact with parents, says Dr. Melillo: "For example, children learn the language from being talked to-early in life and frequently-and when they don't get enough individualized attention, they don't get enough language stimuli." Some studies show that poor quality of day care may translate into increased aggression, non-compliance, and possibly social withdrawal during the preschool and early elementary school years, as well as lower grades and poor work habits.<sup>16</sup>

Parents need to provide an enriched environment for children, where all the senses are developed, says Mark S. Smith, DC, DABCN. "Children should smell, hear, taste, see, and touch different objects. Read to children, play music to them, and develop their motor skills. Parents can do a lot of therapies at home, which not only saves money but gets the parent closer to the child, and the child improves greatly." Bobby Doscher, DC, president and CEO of Oklahaven Children's Center, advises parents to make sure their children aren't skipping any stages of development: "Crawling is important because it helps develop both sides of the body."

Children's physical development is directly connected with their brain development, says Dr. Bjornson: "The nervous system develops fastest in the first seven years, and anything that hinders it is detrimental." Babies shouldn't be in swings, cradles, car seats, or in front of the TV for long periods of time, says Scott Bautch, DC, DACBOH, immediate past president of the ACA Council on Occupational Health. "They need to feel their way around the world. TV is the main culprit, as it stimulates children visually but doesn't develop other senses. It changes children's learning patterns, which leads to learning disabilities. You shouldn't baby-sit your child with the TV so you can clean the house. Play games with your children. Talk, crawl, and walk with them."

Studies have shown a decline in academic functioning since television was introduced. TV reduces sense modality coordination and may result in school failure.<sup>17</sup> Besides, the use of TV and VCRs contribute to the increase in the American sedentary lifestyles and corresponding growth of obesity in children, says Dr. Melillo. "You don't see children outside anymore. They are sitting most of the time. They have become heavier, and their brain development-that is influenced by the level of physical activity-is delayed. If the child's motor activity is limited in the first years of life, it causes postural muscle problems, which may lead to learning disabilities later in life."

Specialists also underline the importance of preparing children for school. "A mentally active child will learn much more readily than one who has had insufficient stimulation in the first five years of life," says Dr. Hurst. To help parents prepare children for school, Dr. Hurst advocates preschool functional neurological assessments: "Waiting until five years to correct disabilities is too late for many children since brain pathways are already formed." Some states are already moving in that direction. The Kentucky legislature passed a pre-school eye examination law in 2000, and the Kansas legislature appropriated funds for continuation of a vision therapy and reading research project in several school districts. California legislators are currently considering bills requiring preschool vision training. If school is a struggle, parents should look into different ways to help the child, says Dr. Bautch. "Do what's best for your child. Your child may have a different way of learning than is taught at school. If you can't do homework with

your child, find a tutor in your community. Try scheduling your child's day according to his or her activity level. Some children come home-and immediately start doing homework-for about two hours. It may be better for the child to run for an hour or two after school."

Parents need to be better advocates for their children, agrees Durkin. "Doctors have much more control over children nowadays than they had 100 years ago. Women used to know how to cure simple ailments. Now, parents give Motrin and Tylenol to children at the drop of a hat. People are looking for a quick fix."

### **Choice of Therapy**

The existing ADHD treatment models leave parents with choices. The choice of the medical model-treatment with stimulants, sometimes accompanied by behavioral therapy-is probably the cheapest and the expected way in the managed care system. But is it best?

Like with any other condition, there is no miracle cure that will help everyone. Treatment should depend on the patient, says Dr. Ward. "Depending on the severity of the case, medication may be necessary, but the nutritional approach should be tried in conjunction with it to gradually wean the child off the medication. A combination of approaches usually works best, so practitioners should talk to each other."

For parents with ADHD kids, it's hard to resist school pressure and not put the child on drugs, says Durkin. "But if possible, they should go to a nutritionist to clean up the diet first. If there is a sensory integration problem, or a problem with vision/auditory information processing, occupational therapy and speech therapy can be helpful."

Prescribing medications is often the only option medical doctors can offer, says Dr. Melillo. "Pediatricians are typically not properly trained to treat ADHD, but in the managed care setting, they treat more and more children without referrals. Sometimes school psychologists will recommend medications, but they can't prescribe. Many school systems recognize occupational therapy, such as sensory integration. Some recognize cognitive behavior-type therapy, especially for autistic children." Dr. Melillo's clinic often gets referrals from pediatric neurologists. "They can only prescribe medications, and they are often not happy to prescribe them, but there is nothing else they can do because they get pressured by teachers and parents. Many doctors are happy to refer children to specialists who can do more for them."

There are situations, of course, when medication is necessary. "Some children have to be medicated for their own safety," says Dr. Carrick. "For example, if the child can't control his impulses and may run out into the street and be hit by a car, it's beneficial to use the medication." But in other cases, medications should be the last resort and used only when nothing else works. "Medications control symptoms without getting to the root of the problem," says Dr. Smith. "If the brain has reduced metabolic rates, the medication will increase them, but if you take away the medication, the problem comes back. Medications will never create the plasticity of the brain."

Prescribing medication without doing anything else sends the message that it fixes the problem, but it's not true, says Dr. Melillo. "When patients come to us, it's their choice to take drugs or not, but we explain to them that we can try to address their motor-sensory problems by diagnosing and treating them specifically, and their ADHD, learning disabilities, or autism may improve."

Taking medications sends another message as well-that the children's problem is chronic and they have no control over it. "Children will grow up and still have ADHD because the drugs will not teach them the coping skills they need, won't address their nutritional or other problems," says Durkin. "Drugs may help them one day in a class, but they don't help long term-neither to be healthier people nor to feel good about themselves."

### **What Chiropractors Can Do**

Fortunately, the public preference for the non-pharmacological approach is growing, says Dr. Carrick. "Society is now well aware of side effects of medications, cigarettes, alcohol, and other chemicals. By far, the majority of children and adults do very well

without a stimulant medication if the clinician can address the problem. Parents should go to a clinician who has experience in treating the disorder. They should question the practitioner, and if the doctor has no experience in treating ADHD, they should ask for a referral to a colleague who does. Before giving medications, take the child to a chiropractic neurologist who is trained to treat conditions like ADHD."

The Carrick Institute for Graduate Studies is currently involved in the final stages of a multi-level investigation in learning, the initial phase of which was conducted at the Parker Chiropractic College of Chiropractic. "The study focuses on learning and brain activity. We are measuring brain activity while applying environmental stimuli, such as spinal adjustments, light, sound, and cognitive tasks, and compiling the data. The investigation is ongoing throughout the world-in Holland, Spain, England, France, Italy, Australia, Japan, Korea, Switzerland, Canada, and the United States-by blinded specialists trained to treat ADHD with a non-pharmacological approach. The blinded controlled study is utilizing ethnographic methodology as well as multivariate statistical determinations because learning and behavior are individual phenomena."

Chiropractic neurology opens broad perspectives for DCs, says Dr. Melillo. "No health care profession is taking hold of ADHD treatment-and yet there is such a need. Neurological disorders grow fast-and the problem with children now will turn into a problem with the adult population very soon-in the form of anxiety disorders and depression. Integrating neurology can put a tremendous thrust into your practice and give you great satisfaction to see children who couldn't speak begin to talk-and see the effect on their families. But we can't do it haphazardly. We need to get proper training-a course specializing in treating the disorders, or a neurological program."

"Since I have become a chiropractic neurologist, I have had an increased ability in serving a wider range of patients," agrees Dr. Smith. "Now I take on difficult cases-MS, Parkinson's disease, cerebral palsy, Tourette's syndrome, dystonia, migraines-and feel comfortable. The goal of doctors of chiropractic is to improve the neurological function that controls all aspects of our health. Our approach is different from medical neurology-we are improving the function, not the symptoms. Subluxation correction is essential, but it is not the only thing to do. Without the correction of the subluxation, very often there will be no result, but when there are other neurological problems, subluxation correction only is often not enough."

"I haven't seen much success with medical treatment of ADHD," says Dr. Bautch. "The patients I've treated come to me after a lot of frustration with medical care, so they think that anything is better than that. It's a great opportunity for DCs. We have communication skills, and we know our patients-we can find out what's wrong with the child. Talk to everyone who has an effect on the child. Find out what stress the child may have-physical, emotional, or nutritional-and you will have phenomenal success. If you are uncomfortable talking to the child about some issues, create a network of people who can do that. You have a great opportunity to do something special for the child, so take it seriously. Sometimes you have to dig for the answer real deep, but it's worth it."

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