

The Role of Complementary and Alternative Medicine in Attention-Deficit Hyperactivity Disorder

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ABSTRACT. The use of complementary and alternative medicine (CAM) in pediatrics has become widespread. Parents of young children with developmental and behavioral problems such as attention-deficit hyperactivity disorder (ADHD) are particularly drawn to CAM interventions to avoid or decrease use of psychotropic medications. This paper reviews the epidemiology of CAM use for ADHD, describes a conceptual model of CAM, discusses a variety of commonly used therapies for ADHD, and introduces a systematic, pragmatic approach to discussing CAM therapy use with parents. *J Dev Behav Pediatr* 23:S37-S45, 2002. Index terms: *complementary and alternative medicine, attention-deficit hyperactivity disorder.*

The mother of a little girl you have diagnosed with attention-deficit hyperactivity disorder (ADHD) calls you. "I know you said she has ADHD and should be on medicine, but I don't want to put my child on drugs. What if she gets addicted? My husband found out that cutting down on sugar and food dyes can help calm her down. Also, I read on the Internet that pycnogenol and blue-green algae can cure ADHD and they don't have any side effects. Is that true? How come you didn't tell me about these treatments for ADHD?"

For many parents and clinicians, choosing an acceptable therapy for the young child with ADHD is very difficult. First, clinicians have generally avoided prescribing stimulants except as a last resort for very young children, although in recent years the use of psychotropic medications for preschoolers has increased dramatically.^{1,2} Unlike evidence demonstrating the benefits of stimulant therapy for school-aged children, data supporting the effectiveness of stimulants in children under 6 years of age are sparse.³ Second, parents often are concerned about giving their child a "mind-altering" drug without knowing how long the child will need to be treated and what long-term side effects there might be. Understandably, then, parents may search for what they consider to be more "natural" therapies, hoping either to lessen the need for stimulant therapy (i.e., as adjunctive or "complementary" therapy) or to avoid stimulants altogether (i.e., as "alternative" therapy).

Thus, it is important for clinicians caring for children with ADHD to be familiar with complementary and alternative medicine (CAM) and its role in ADHD. This paper will review the epidemiology of CAM use in ADHD, discuss a conceptual model of CAM as well as selected

therapies used to treat ADHD, and suggest ways to incorporate CAM into pediatric practice.

WHAT IS COMPLEMENTARY AND ALTERNATIVE MEDICINE? A DEFINITION

In 1993, "unconventional medicine" was defined as "medical interventions not taught widely at United States medical schools or generally available at United States hospitals."⁴ In the year 2001, as more medical schools offer courses in alternative medicine, more hospitals and clinics offer therapies such as acupuncture, hypnosis, and massage, and third party payors are increasingly willing to reimburse for such therapies, this definition has become quite dated. A more recent definition used by the Cochrane collaboration defines complementary and alternative medicine (CAM) as "...a broad domain of healing resources that encompasses all health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health systems of a particular society or culture in a given historical period."⁵

Implicit in this definition is the reality that the boundaries between CAM and mainstream medicine are often unclear, as what was once considered alternative (e.g., acupuncture for management of pain) moves into conventional medicine.

COMPLEMENTARY AND ALTERNATIVE MEDICINE USE IN CHILDREN: EPIDEMIOLOGY

Adult use of complementary and alternative medicine (CAM) has increased significantly in the past decade.⁶ Although there are no similar national epidemiologic studies in children, a series of regional studies over time suggests that CAM use in general pediatric populations is also increasing, with more recent estimates of 20% to 21% of children in the Bath (United Kingdom) and Washington, DC areas.⁷⁻⁹ Among children with serious or chronic medical and psychosocial conditions, rates of CAM use are much

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higher (e.g., 66% in children with cystic fibrosis, 70% in patients with juvenile rheumatoid arthritis, and 70.1% in homeless youth).¹⁰⁻¹²

One would expect that CAM use in attention-deficit hyperactivity disorder (ADHD), a highly prevalent chronic condition, would be similarly common. There are remarkably few systematic studies of the prevalence of CAM use in ADHD. A developmental referral center in western Australia found that approximately 64% of their patients diagnosed with ADHD had used "other" therapies in addition to stimulants, most commonly dietary restriction, multivitamins, and occupational therapy.¹³ Data from our institution suggest that over half of the parents of children referred for ADHD evaluation have used some form of CAM therapy for treatment of ADHD (E. Chan, L.A. Rappaport, and K.J. Kemper, unpublished manuscript, May 18, 2001). In a 1997 American Academy of Pediatrics Ambulatory Care Quality Improvement Program self-assessment exercise, 38% of pediatricians reported being asked about alternative therapies by their patients with ADHD.¹⁴

CONCEPTUAL MODEL: THE THERAPEUTIC WHEEL OF COMPLEMENTARY AND ALTERNATIVE MEDICINE

What complementary and alternative medicine (CAM) therapies are children with attention-deficit hyperactivity disorder (ADHD) using? The answers depend on geography, the availability and types of CAM practitioners in a given area, and the current fads at any given time. The diversity of CAM therapies is remarkable; it is well beyond the scope of this paper to review the majority of CAM therapies and their effectiveness in ADHD. Several other articles on this subject have recently been published.^{15,16} However, learning a comprehensive model for CAM helps one to organize an understanding of CAM therapies and to develop a practice of discussing CAM with families.

One useful conceptual model, proposed by Kemper,¹⁷ also demonstrates how conventional therapies for ADHD integrate into a holistic therapeutic approach. Kemper's model takes the form of a wheel of therapies, with the patient at the center and different therapies at the rim (Fig. 1). Specific therapies are grouped into one of four broad healing modalities roughly based on the proposed mechanism of action: biochemical, lifestyle/mind-body, biomechanical, and bioenergetic. For ADHD, the most commonly used therapies fall into the biochemical and lifestyle/mind-body groups.

Biochemical Therapies

Biochemical therapies act at the level of biochemistry and are perhaps the most familiar and readily understood by physicians. Among the most common biochemical therapies are medications, herbal remedies, vitamins, and nutritional supplements. Table 1 summarizes the uses, suggested dosages, adverse effects, potential drug interactions, and contraindications of these substances.

Treatment of ADHD symptoms with herbal remedies is generally based on the herbs' traditional uses. For example,

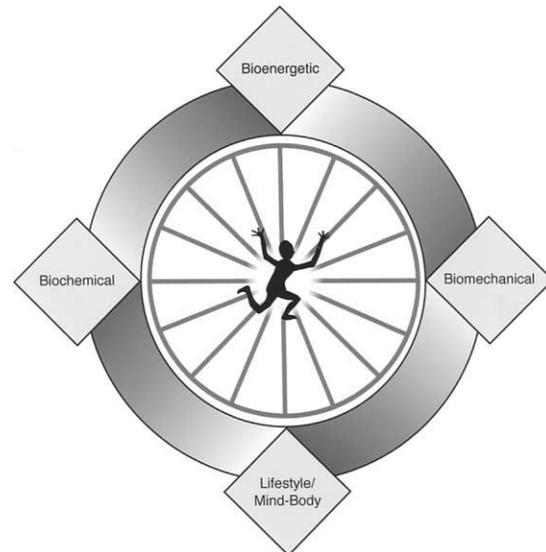


FIGURE 1. The therapeutic wheel of complementary and alternative medicine (CAM). (Adapted with permission from Kemper K: Separation or synthesis: A holistic approach to therapeutics. *Pediatr Rev* 17:279-283, 1996.)

the anxiolytic and soporific properties of sedative herbs such as chamomile, kava kava, and valerian are thought to be useful for treating the restlessness, decreased concentration, and possible sleep difficulties associated with ADHD. Although the Food and Drug Administration (FDA) has recognized chamomile and valerian as generally safe, kava kava is associated with adverse effects related to chronic or heavy use and may potentiate the effects of other central nervous system depressants such as alcohol and benzodiazepines.^{18,19} Another popular herb, Gingko biloba, is often used to treat memory problems and to improve cognition. A recent meta-analysis has suggested that long-term Gingko therapy may improve cognitive function, memory, and concentration in adults.²⁰ Because Gingko antagonizes platelet activating factor, it should be used with caution in patients on antiplatelet or other anticoagulant therapy.

Subtle deficiencies in certain vitamins and minerals have often been suggested as causes for hyperactivity and impulsivity. Certainly, early nutritional deprivation has been associated with long-term effects on cognition, behavior, and learning.^{21,22} In addition, iron deficiency, with or without anemia, has recognized effects on attention and cognition. However, little evidence suggests that supplementing otherwise adequate diets with "extra" vitamins or minerals or using "megadose" therapy (often several times the recommended daily dosage) is effective in treating ADHD. Such therapy may even be harmful. One double-blinded, placebo-controlled crossover study of combination megavitamin treatment found that children with ADHD exhibited 25% more disruptive classroom behavior while on megavitamins, and more than 40% had elevated serum transaminases.²³

Nevertheless, parents often use iron, pyridoxine, zinc, magnesium, coenzyme Q, and other vitamins and minerals to treat hyperactivity and inattention. It is thus important to

Table 1. Biochemical Therapies Commonly Used in Attention Deficit Hyperactivity Disorder

Intervention, Mechanism and Common Uses, Suggested Dose	Adverse Effects and Toxicities	Precautions for Use and Potential Drug Interactions
<p>Sedative Herbs Chamomile^{18,19,50,51} Anti-inflammatory, antispasmodic, anxiolytic, sedative Adults: Usually prepared as a tea; liquid extract 1–4 mL t.i.d. Children: unknown</p>	<p>Rare hypersensitivity reactions in individuals allergic to ragweed, asters, and chrysanthemums High dose (of dried flowering heads): vomiting</p>	<p>Precautions: On FDA's Generally Recognized as Safe List. Interactions: No drug-herb interactions reported.</p>
<p>Kava Kava^{18,19,51} Anxiolytic; in animals, anticonvulsant, antispasmodic, central muscle relaxant</p>	<p>Rare: allergic reactions High doses: muscle weakness Chronic use: dry, flaky, yellowed skin and red eyes 20% of heavy users develop weight loss, puffy face, scaly rashes, hematuria, increased HDL cholesterol, decreased platelets</p>	<p>Precautions: Contraindicated in pregnancy and nursing; endogenous depression (may increase risk of suicide). Should not be taken for longer than 3 mo without physician supervision. Interactions: May potentiate action of other CNS depressants such as alcohol; reports of necrotizing hepatitis when used with other herbs.</p>
<p>Valerian^{18,19,52} Sedative; for mild to moderate sleep disorders <15 yr: 220 mg t.i.d. for restlessness and sleep disorders Adults: 400–900 mg before bedtime for mild to moderate sleep disorders; 300–400 mg t.i.d. for restlessness and tension</p>	<p>Rare: Gastrointestinal upset Chronic use: headache, mydriasis, sleeplessness, restlessness, cardiac dysfunction; withdrawal symptoms if chronic high doses (>5 g/d) abruptly discontinued</p>	<p>Precautions: On FDA's Generally Recognized as Safe List. Children should have preparations free of potentially mutagenic valepotriates and baldrinals. Some tinctures contain 40–60% alcohol. Interactions: May potentiate effects of CNS depressants (speculative).</p>
<p>Other Herbs and Supplements Blue-green algae (spirulina)^{51,53} Source of protein, B vitamins, and iron; antitumor effects Children: unknown</p>	<p>Generally nontoxic in humans, but nausea, diarrhea, numbness, and tingling may occur</p>	<p>Precautions: Preparations may be contaminated by heavy metals and microbes.</p>
<p>Evening primrose oil⁵⁴ Contains essential fatty acids (linoleic acid and gamma linolenic acid); often used for inflammatory disorders, eczema, premenstrual syndrome Children: 2–4 g/d for eczema Adults: 4–8 g/d for eczema</p>	<p>High doses (several grams): diarrhea, headache Chronic use: nausea, diarrhea, headache</p>	<p>Precautions: Unknown. Generally approved as safe in 30 countries.</p>
<p>Ginkgo biloba^{18,51,55} Antioxidant; improves microcirculation; antagonizes PAF; used in dementia, peripheral vascular disease Children: unknown Adults: 120–240 mg/d divided t.i.d.</p>	<p>Rare: Gastrointestinal upset, dizziness, headache, allergic skin reactions Chronic use: Sporadic reports of spontaneous subdural hematoma Toxic syndrome (seizures and loss of consciousness, possible death) in children ingesting dried seeds (sometimes available in Asian herb and food stores)</p>	<p>Precautions: Use with caution in patients on anticoagulants. No studies in pregnancy and lactation. Whole leaf preparations and fleshy fruit pulp are potent contact allergens. Intravenous preparations associated with anaphylactic shock. Oral tablet should not be chewed. Interactions: Unknown.</p>
<p>Melatonin⁵¹ Antioxidant hormone, regulates sleep-wake cycle; often used for jet lag and sleep disorders Children: 0.5–3 mg (2–10 mg in some studies)</p>	<p>With doses <8g: heavy head, headache, transient depression</p>	<p>Precautions: May aggravate depressive symptoms; may lower seizure threshold in children with epilepsy; may suppress puberty. At high doses (75 mg), may function as contraceptive.</p>
<p>Pycnogenol^{51,56} Antioxidant, inhibits platelet aggregation and lipid oxygenation; used in peripheral vascular diseases</p>	<p>No adverse effects of chronic or acute use reported</p>	<p>Precaution: Use with caution in patients on anticoagulants. Interactions: Unknown.</p>

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Table 1. Continued

Intervention, Mechanism and Common Uses, Suggested Dose	Adverse Effects and Toxicities	Precautions for Use and Potential Drug Interactions
Children: unknown Adults: 50–100 mg/d for general antioxidant use; 150–300 mg/d to treat disease		
Vitamins and Minerals Coenzyme Q ⁵⁷ Antioxidant; mitochondrial energy production Children: 2 mg/kg used in studies Adults: 50–300 mg daily divided bid or t.i.d. for chronic heart failure	Rare: stomach upset, diarrhea, anorexia, nausea, skin rash Chronic use: none reported	Precautions: Suggested caution in patients with impaired hepatic excretion function and patients taking hypolipidemic and hypoglycemic agents. Interactions: None reported.
Iron ²⁵ Iron deficiency anemia RDA for elemental iron: 0–3 yr: 6–10 mg 4–10 yr and adolescent males: 10 mg Adolescent females: 10–15 mg	Common: constipation, nausea, vomiting, diarrhea High dose: Moderate to high potential for toxicity Early symptoms of acute toxicity: diarrhea, fever, severe nausea, sharp abdominal pain, severe vomiting Late symptoms of acute toxicity: bluish lips and fingernails, drowsiness, pale clammy skin, seizures, cardiovascular collapse	Precautions: Contraindicated in conditions associated with iron overload (e.g., hemochromatosis, hemosiderosis, porphyria cutanea tarda, need for frequent blood transfusions). Interactions: Decreased iron absorption with antacids, calcium supplements, milk products, whole-grain foods, eggs, cimetidine; iron decreases absorption of fluoroquinolones, tetracyclines, and oral zinc supplements.
Magnesium ²⁵ Magnesium deficiency prophylaxis, constipation RDA (elemental magnesium): 0–3 yr: 40–80 mg 4–6 yr: 120 mg 7–10 yr: 170 mg Adolescent males: 270–400 mg Adolescent females: 280–300 mg	High dose (oral): gastrointestinal upset, diarrhea, nausea, flushing, faintness High dose (parenteral only): diarrhea, renal failure, mental status changes, muscle weakness, respiratory difficulty, hypotension, cardiac arrhythmias	Precautions: Contraindicated in heart block and renal failure; use with caution in respiratory disease, myasthenia gravis, and renal impairment. Tables cannot be crushed or chewed. Interactions: May potentiate other CNS depressants; nifedipine, calcium, quinolones, tetracycline.
Pyridoxine (Vitamin B6) ²⁵ Pyridoxine deficiency states RDA: 0–3 yr: 0.3–1 mg 4–6 yr: 1.1 mg 7–10 yr: 1.4 mg Adolescent males: 1.7–2.0 mg Adolescent females: 1.4–1.6 mg	Chronic high dose (2–6 g/d in adults for 2 mo or longer): peripheral sensory neuropathy (reversible) Pyridoxine dependency syndrome reported with 200 mg/d for over 30 d.	Precautions: Avoid large doses during pregnancy to prevent pyridoxine dependency syndrome. Interactions: Levodopa (pyridoxine reverses effect), isoniazid, penicillamine; estrogens (increase pyridoxine levels), theophylline (decreases pyridoxine levels).
Zinc ²⁵ Zinc deficiency; Enhances immune function RDA: 0–3 mg; 5–10 mg 4–10 yr: 10 mg Adolescent males: 15 mg Adolescent females: 12 mg	Rarely (with high doses >2 g): gastrointestinal upset, nausea, fatigue, fever, chills Zinc toxicity: vomiting, hypotension, jaundice, pulmonary edema	Precautions: Use with caution in copper deficiency. Interactions: Zinc decreases absorption of copper and tetracycline; thiazide diuretics increase zinc excretion; fiber, large doses of iron, milk, poultry, penicillamine reduce zinc absorption.

CNS, central nervous system; FDA, Food and Drug Administration; HDL, high density lipoprotein; RDA, recommended dietary allowance; HDL, high-density lipoprotein; PAF, platelet activating factor.

discuss the potential toxic effects of these substances when given as megadoses (Table 1). Iron is particularly dangerous. Although it is often perceived as safe because of its ubiquitous presence in multivitamin supplements, cereals, and other foods, iron is the leading cause of poisoning deaths in children under 6 years of age.²⁴ Acute toxicity can occur in amounts as little as 20 mg/kg of elemental iron in children.²⁵

Nutritional supplements have often been used to enhance overall well-being or for their specific physiologic effects. For example, blue-green algae is touted as a “powerful immune system enhancer.”²⁶ Supplements such as pycnogenol and evening primrose oil are used for their antioxidant and membrane-stabilizing properties, presumably to improve the function of the nervous system. Melatonin may be useful for promoting sleep in children

with ADHD and insomnia;²⁷ however, it may also suppress puberty and lower the seizure threshold in children with pre-existing neurologic disabilities.^{28,29} Whereas the health benefits of these and other supplements are currently under scientific investigation, published randomized, controlled studies for their effectiveness in ADHD are lacking. The evidence for the effectiveness of several popular herbs and supplements for treating ADHD was recently reviewed.¹⁶

It is important to remember that the FDA does not regulate nutritional supplements. Parents need to know that the consistency, purity, potency, and safety of natural remedies can vary among manufacturers and even within the same lot produced by a single manufacturer. Contamination by pesticides, heavy metals, and other products may also occur at any time during the manufacturing process.

Lifestyle/Mind-Body Therapies

These interventions are often common-sense therapies all of us incorporate into our daily lives, including exercise, nutrition, environmental changes, and mind-body techniques such as hypnosis, psychotherapy, and biofeedback.

Parents often encourage their children with ADHD to engage in exercise, whether to improve their overall well-being or (consciously or unconsciously) to “tire them out.” Common activities include gymnastics, martial arts, and team sports. Although it is doubtful that exercise alone can “cure” ADHD, exercise can certainly provide opportunities to develop social skills and to help improve the motor incoordination so often present in children with ADHD.

Perhaps the most popular and enduring alternative therapy for ADHD is dietary manipulation, especially the Feingold/Feingold-like diets and the low-sugar/sugar elimination diets. In an era of increased focus on how diet can influence behavior, mood, and disease, parents often turn to elimination diets in an effort to lessen their child’s symptoms and to promote overall health. Dietary changes add to the parents’ sense of efficacy because the household diet is more directly under their control. Because other family members often also adopt such dietary changes and attitudes to make it easier to plan meals, whole-diet interventions are best classified as lifestyle therapies rather than as biochemical therapies.

The Feingold diet originated from allergist Dr. Benjamin Feingold’s observation that the rise in hyperactivity and learning disabilities among children appeared to coincide with the rise in use of artificial salicylates in food additives and colorings.³⁰ By eliminating from the diet foods containing artificial and natural salicylates (e.g., aspirin, Pepto-Bismol, apples, berries, citrus, cucumbers, grapes, tomatoes, tea), Feingold reported behavioral improvement in 50% of the children with ADHD. Subsequent well-controlled studies have shown that the Feingold diet is not effective for ADHD, although it may be useful for a small group of children with true sensitivities to food additives.^{31,32}

Another popular dietary manipulation is the sugar-elimination diet. Several recent studies, as well as a meta-analysis, have failed to demonstrate a significant association between sugar and behavior.^{33,34} However, the “sugar and hyperactivity” myth endures among parents, and many try to

restrict their child’s sugar intake regardless of any observable improvements in behavior.

The principles behind environmental interventions are straightforward: clear organization and minimizing distractions. Environmental changes often used for ADHD include adherence to regular daily schedules, structured home and school settings, sitting at the front of the classroom, and using white noise during homework time. Music therapy is another potentially useful environmental intervention: One study has found that hyperactive boys made more errors than healthy boys while listening to fast-tempo music, whereas both groups performed as well when listening to slower-tempo music.³⁵

Mind-body therapies are geared toward invoking the mind’s ability to influence body function and symptoms. The key principle is that thoughts or emotions (“stresses”) have an important impact on health. By improving awareness of one’s own bodily systems, one develops a sense of self-efficacy and control and is more able to move from a state of internal disorder to one of homeostasis. Probably most relevant for children with ADHD is that mind-body therapies can help reduce autonomic hyperarousal to stress by eliciting the relaxation response.

Several mind-body therapies are commonly used for ADHD. Many of these are readily recognized and are considered established interventions: professional counseling, parenting skills training, and behavioral therapies such as positive rewards for desired behaviors.

A growing literature suggests that relaxation training through a variety of techniques (progressive muscle relaxation, meditation, deep breathing, hypnosis, meditation, biofeedback) can help children with ADHD learn to relax and thus presumably decrease autonomic activity. Other reported benefits have included reductions in parent- and teacher-reported problem behavior, more internal locus of control, and greater attention to task.^{36–39} These studies must be interpreted cautiously because of very small sample sizes, but their results are nevertheless intriguing. Relaxation-training skills need to be practiced regularly at home for continued effect.

Two types of biofeedback have been studied in children with ADHD. Electromyogram (EMG) biofeedback focuses specifically on developing the child’s ability to recognize and reduce his own muscle tension, resulting in more relaxation. Several studies have suggested that EMG biofeedback can decrease hyperactivity and problem behaviors such as impulsivity and aggression.^{40–42}

Electroencephalogram (EEG) biofeedback therapy was developed after it was observed that a subset of children with ADHD appear to have excessive theta (slow) wave and decreased beta (fast) wave activity on EEG. Teaching children to alter their EEG pattern through biofeedback thus may help normalize their cortical function. One study, using a pre/post-training design, found a correlation between decreased theta wave activity and improvements in visual attention, ADHD behavior scores, and intelligence scores.⁴³ However, studies with more rigorous methodology need to be done. EEG biofeedback can be an unwieldy therapy requiring 35 to 50 training sessions, although results can be observed after 15 to 20 sessions.⁴⁴

Biomechanical Therapies

These therapies stimulate, align, move, or remove larger tissues and organs. Therapies such as surgery, massage, and spinal manipulation (including chiropractic) are in this category. Few have been evaluated for their effectiveness in ADHD.

Massage, which helps to lower heart rate, increase blood flow through the body, and increase circulating endorphins, is often used to promote relaxation and to reduce stress. Massage's relaxing effects probably explain its popularity for children with ADHD. However, only one study has evaluated the effects of massage therapy on symptoms of ADHD. In this study, male adolescents who received massage therapy reported improved mood and were rated by teachers as less hyperactive than those who had received relaxation therapy.⁴⁵

Chiropractic originated from the concept that misalignment of spinal segments leads to illness. In theory, subluxations cause nerve irritability, which leads to ineffective nervous system function and agitation, decreased concentration, and abnormal behavior.⁴⁶ Very few studies of chiropractic in ADHD exist.

Bioenergetic Therapies

The underlying principle of bioenergetic interventions is that they restore the harmonious balance of an invisible energy or spirit that surrounds and flows through the body. These therapies are often not based on known scientific laws, but several have been shown to be effective for certain conditions in well-conducted studies. Examples of bioenergetic therapies include acupuncture, therapeutic touch, prayer, and homeopathy.

Acupuncture is based on the theory that illness arises when the body's flow of energy (Qi or Chi) is no longer in balance. To restore the proper flow of energy, points along the meridians that carry Qi are stimulated with needles, heat (moxibustion), vigorous massage (shiatsu), or electrical current. Studies of acupuncture in ADHD are ongoing.

For therapeutic touch, healing energy can be transmitted from a therapist to a patient, releasing blockages in the patient's energy flow. Rather than touch the body directly, as in massage, therapists work on the energy fields surrounding the body. Similar therapies include Qi Gong, Reiki, and Healing Touch.

Homeopathy is also based on the idea that illness results from disrupted "vital energies." However, homeopathic remedies are often difficult for those trained in Western biomedicine to grasp. Treatment, which is highly individualized, is based on two primary principles: *like cures like* and *the more dilute the remedy, the more potent it is*. In other words, the substance that produces symptoms in a healthy person should cure the same symptoms in a sick person, and extreme dilutions of plant, animal, or mineral extracts are more potent than more concentrated remedies because of the bioenergy of the molecules in a dilution. Because of these often extreme dilutions (from 1:10 to 1 in billions), however, homeopathic remedies are likely to be reasonably safe. Remedies are also specifically targeted to symptom clusters or profiles; for example, *Cina* (wormseed) for defiance and

irritability, *Veratrum album* (white hellebore) for restlessness and fidgety behavior, and *Colocynthis* (bitter cucumber) for children who are easily upset.⁴⁷

INCORPORATING COMPLEMENTARY AND ALTERNATIVE MEDICINE INTO PRACTICE: AN APPROACH

Holistic pediatrics is an approach to practice that goes beyond the traditional medical model to consider the patient's mind, body, emotions, and spirit in the context of his or her family's beliefs, values, culture, and community. Most clinicians caring for children already use this approach, although they may not consciously define it as "holistic." It bears emphasizing that complementary and alternative medicine (CAM) is only one component of holistic pediatrics. However, a common-sense approach to incorporating CAM into practice can help make one's practice more holistic.

Several studies have found that perhaps one-third of patients discuss their use of CAM with their physician.^{6,13} Many patients are reluctant to approach their physician, fearing disapproval or disparagement. Clinicians may be reluctant to discuss CAM with patients and families, often because of their own skepticism or lack of knowledge about CAM. It is clear, however, that we must overcome this reluctance. Discussing CAM affords a valuable opportunity to learn about and understand a family's values and attitudes toward therapy, allow mutual exchange of information, and forge an effective therapeutic alliance. Given the opportunity, most families are eager to discuss CAM with physicians. The most important principle is that providers *need to ask*.

Clinicians should have several goals in mind when discussing CAM with families. First, they need to learn what therapies families have thought about or have tried for treating their child's attention-deficit hyperactivity disorder (ADHD). Asking about CAM is no different from asking about parents' methods of discipline or ways of dealing with a fever; a comprehensive history is essential. The key to a good history, of course, is a systematic approach—whether asking for symptoms by organ system or asking about use of therapies by the therapeutic wheel. Just as a clinician would ask a series of questions to characterize a symptom (e.g., How long does it last? When does it occur? When does it go away? What makes it better or worse?), one should also try to characterize use of a therapy. For example, in the case of a parent wondering about special diets, questions could include:

- What specific diet changes have you tried? (e.g., eliminate sugar, eliminate all preservatives)
- When did you start it? How long did you try it?
- Did it seem to work? What behaviors improved? What worsened?
- Why did you stop it?
- Where did you hear about it?

A second goal is for clinicians to understand what parents see as the important goals of therapy (Table 2).⁴⁸ This necessarily leads to a discussion of the family's values and

Table 2. Incorporating Complementary and Alternative Medicine into Practice

Lay the foundation: Build the partnership

Ask the parents:

- What's been tried before?
- How useful was it?

Clarify goals of treatment

Why do parents want treatment?

- to cure disease (e.g., antibiotics for ear infection)
- to manage symptoms (e.g., morphine for pain, stimulants for hyperactivity)
- to prevent disease (e.g., immunizations, bike helmets)
- to promote health and build resilience (e.g., exercise, diet)
- to promote harmony, peace, and sense of support (e.g., social support, reassurance, prayer, meditation)
- to do everything possible to help the child

What do parents want to change?

- avoid or decrease number of medications
- lessen specific behaviors or symptoms
- decrease side effects
- simplify therapy

What do you, the clinician, want to change? How do your goals differ from the parent's goals?

Clarify expectations of treatment

What symptoms of behaviors can be affected? (i.e., how will you know if the treatment worked?)

What is realistic change? (e.g., go from mostly C and D grades to all C grades vs all A's)

What resources are needed for change to occur? (e.g., weekly phone call "check-in" to record progress and to receive support from providers, parenting classes to learn how to establish a structured environment, respite care so parents can spend exclusive time with other children)

Establish realistic time frame for treatment effects to occur.

(Adapted with permission from the publisher, from Kemper K. Integrative medicine: Talking with families about complementary, alternative, and mainstream medical therapies in acute care settings. *Emerg Off Pediatr* 13:45–49, 2000.)

attitudes toward treatment for ADHD. For some families, a treatment isn't effective unless it cures their child's ADHD. For others, treatment should promote family solidarity or a sense of peace. Other possible goals of therapy include lessening symptoms (e.g., decreasing impulsive behavior), enhancing their child's well-being and resilience (e.g., eating well, getting enough sleep), and preventing symptoms (e.g., future delinquency).

Implicit in this discussion is acknowledging the differences between the parent's goal of therapy and the clinician's goal of therapy. Whereas both parents and clinicians can usually agree that decreasing symptoms of hyperactivity, impulsivity, and inattention is important, many parents also hope for a cure ("He'll grow out of it, right?"). Promoting a child's well-being and resilience is another important mutual goal but may mean different things. For the physician, stimulants can help decrease difficult behaviors and improve school and home functioning. For the parent, stimulants may affect their child's appetite, growth, mood, and sleep—all necessary for physical and emotional health. Whereas physicians may be focused on short-term goals such as increasing attention and improving school performance, parents may also be concerned about preventing adolescent

delinquency and motor vehicle accidents. Understanding how goals differ can lessen misunderstanding and frustration and pave the way for mutual prioritization of treatment objectives.

A third goal is parent education. Clinicians are the family's best source of information regarding potential side effects of CAM therapies, interactions among different CAM therapies (e.g., different herbs), and interactions between conventional and CAM therapies. Resources for information about CAM therapies, including side effects, toxicity, interactions, and current clinical trials, are in Table 3.

Clinicians can also help families establish a system to evaluate how well a therapy is meeting their mutually-agreed treatment objectives. Having a written "action plan" listing the priority goals of therapy and concrete daily or weekly measurements of target behaviors can be very helpful as parents try new CAM therapies.

Finally, clinicians can teach families how to critically appraise the advertising for a CAM therapy. For example, the rationale for using many CAM therapies is based on traditional uses or purported mechanisms of action rather than on scientific data. However, aggressive and widespread marketing in the lay press and on the Internet often promote such therapies as "miracle cures" for ADHD. Some of this marketing can sound insidiously scientific and may appear to be logically sound, if not necessarily *biologically* sound; other marketing may be factually accurate yet its overall message misleading. For example, literature used by one

Table 3. Resources for Complementary and Alternative Medicine and Attention-Deficit Hyperactivity Disorder

General holistic Pediatrics resources

Center for Holistic Pediatric Education and Research at Children's Hospital, Boston (<http://www.childrenshospital.org/holistic>).

Kemper KJ. Separation or synthesis: A holistic approach to therapeutics. *Pediatrics in Review* 1996; 17:279–283. (Reviews the "therapeutic wheel" model of holistic medicine.)

Kemper KJ. *The Holistic Pediatrician*. New York: HarperCollins, 1996. (Commonsense reference for parents and for pediatricians; supportive of home and alternative therapies for common conditions, yet urges need to see a physician when necessary.)

CAM therapies

The Longwood Herbal Task Force. www.mcp.edu/herbal/default.htm. (Extensive, evidence-based review of many herbal remedies and nutritional supplements.)

McMaster University Health Care Information Resources—Alternative Medicine (<http://hsl.mcmaster.ca/tomflem/altmed.html>).

National Center for Complementary and Alternative Medicine. www.nccam.nih.gov. NIH agency, includes CAM citation index. *Review of Natural Products, Facts and Comparisons* (1-800-223-0554).

TOXLINE (<http://toxnet.nlm.nih.gov/>) and TOXNET (<http://toxnet.nlm.nih.gov/>) from the National Library of Medicine.

What your patients' families might be reading

Children and Adults with ADHD. www.chadd.org. (National advocacy organization, supports proven therapies.)

Holistic Healing Web Page (ADD Holistic Medicine Center). www.holisticmed.com/add. (Testimonials, anecdotes, logically plausible therapies; solid data lacking.)

ADHD, attention deficit/hyperactivity disorder; CAM, complementary and alternative medicine; ADD, attention deficit disorder.

company to promote the benefits of blue-green algae for ADHD states:

Dietary polyunsaturated fatty acids (PUFAs), especially omega-3 fatty acids, have been shown to be beneficial to the immune, cardiovascular, and nervous systems. It is interesting to note that nearly 50% of the lipid content of dried [*Aphanizomenon flos-aquae*] is composed of omega-3 fatty acids... [D]increased concentrations of certain PUFAs in plasma have been found in children diagnosed with Attention-deficit hyperactivity disorder (ADHD) (Stevens, 1995). Although the cause of ADHD is believed to be multifactorial, eating foods containing PUFAs may be helpful. Based on various unpublished studies, consumption of *Aph. flos-aquae* was demonstrated to be beneficial in the treatment of ADHD.^{26,49}

For a parent eager to find an alternative to stimulant therapy, a natural immune- and nervous system-enhancer may sound extremely attractive. It therefore becomes all the more important for clinicians to review promotional materials with parents.

Conclusion

CAM therapies for ADHD are often very attractive for families of young children with ADHD. It behooves clinicians to be familiar with the popular CAM therapies (print and electronic references for both professionals and parents are in Table 3). Incorporating a systematic approach to discussing CAM with families can only benefit children with ADHD and their families. [Editor: These references have been cited in Table 1⁵⁰⁻⁵⁷.]

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