Alternative asthma therapies: An evidence-based review

By Kathi J. Kemper, MD, MPH, and Mitchell R. Lester, MD

From Ma huang to bee pollen, deep breathing to acupuncture, alternative asthma therapy is in vogue. You need to know what your patients are using, whether it's safe, and how it works. Here's the evidence.

Suppose you agree with the National Heart, Lung, and Blood Institute (NHLBI) asthma guidelines that patient education is essential for good asthma management. You start a class for families of school-age patients, and find yourself barraged by questions about complementary and alternative medical (CAM) therapies.

- Should we start our child on herbs or vitamins to help decrease his need for medications?
- I've heard that the Chinese have used ma huang for thousands of years, and my friend says vitamin C has really helped her asthma. Are these remedies safe?
- Can you refer us to an acupuncturist or homeopathic practitioner for supplementary treatments?

How do you answer questions like these? Should you warn families off these far-out, "unscientific" approaches, or just go along on the assumption that since these remedies are "natural," they're probably harmless? Is it possible that some of them work? How can you tell?

This article will help you evaluate the claims and the evidence, focusing on biochemical, lifestyle, and biomechanical and bioenergetic alternatives to standard therapies (Table 1). The article is *not* meant to replace information on standard medical care, as outlined in Dr. Kemper's article, "A practical approach to chronic asthma management," in the August 1997 issue of *Contemporary Pediatrics.*

TABLE 1

Alternative therapies for asthma

Biochemical
Herbs
Vitamins
Other nutritional supplements
Lifestyle
Diet
Exercise
Environmental changes
Mind-body therapies
Biomechanical
Massage
Spinal adjustment
Bioenergetic
Acupuncture
Healing touch
Prayer
Homeopathy

Why patients choose alternative therapy

Alternative therapy is not often discussed with physicians, but it is widely used these days—especially for children with chronic diseases like asthma. An Australian survey of asthmatic children from 1 to 6 years of age, for example, showed that 55% used alternative therapy. The CAM therapies most commonly used for asthma are dietary changes, herbal remedies, meditation, and homeopathy.[1]

Families may seek CAM ther-

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TABLE 2

An herbal ethnography

Culture	Asthma remedies
Traditional Chinese medicine	Shinpi-to Licorice root *(Glycyrrhiza glabra radix)* Ma huang *(Ephedra sinica)* *Gingko biloba*
Kanpo (Japan)	Saiboku-to Sho-weiryu-to Sho-saiko-to
Ayurvedic medicine (India)	*Coleus forskohlii* *Tylophora indica* Mullein *(Verbascum thapsus)*
Hawaiian kahuna remedies	Mamane *(Sophora chrysopholla)* Kava kava *(Piper methysticum)* Popolo *(Solanum americanum)* Kukui *(Aleurites molucana)*
Puerto Rican	Siete jarabes Agua marvilla Jarabe maguey
European	Coffee and tea Onions *(Allium cepa)* *Gingko biloba*
Native American	Evening primrose *(Oenothera biennis)* Jimsonweed *(Datura stramonium)* Licorice root Mullein Slippery elm bark *(Ulmus flava)* Wild cherry bark *(Prunus virginiana)*

apies because they are frustrated with modern medicine's inability to "cure" asthma or because they fear the adverse effects of steroids and other common asthma medications. Or they may prefer the traditional practices of their ethnic group, or want therapies that seem more "natural" than the medications physicians prescribe, or be unwilling to relinquish control over their children's health to so-called experts.

Whatever the reason for choosing CAM, the most commonly used therapies are herbs and other dietary supplements. Whether they are purified or raw, synthetic or natural, modern or ancient, herbs and supplements work biochemically—just as standard medications do. Their risks and benefits can be evaluated in randomized, double-blind, placebo-controlled clinical trials, and there may be more such studies than you are aware of.

Herbal remedies

Herbal remedies are a mainstay of ethnobotanical medicine worldwide (Table 2). Cultural remedies that are part of traditional Chinese medicine (TCM), Kanpo (the Japanese indigenous medical system), Ayurvedic medicine (the traditional medicine in India), and other traditional healing systems rely heavily on herbs. Like medications, herbs are believed to work through a variety of mechanisms. Some decrease inflammation (licorice root), while others soothe irritated airways (slippery elm bark and wild cherry bark), reduce anxiety (kava kava), relieve bronchospasm (ephedra), or dry secretions (Jimsonweed, also known as datura). Herbs are used singly and in combination. The Puerto Rican remedy, siete jarabes, is a combination remedy, a honeyed syrup containing almond oil, castor oil, wild cherry, licorice, and cocillana.[2]

Many immigrants rely on traditional therapies rather than main-

stream medications. To the extent that herbs are not toxic and are an important part of a patient's cultural belief system, they can be safely incorporated into a medical plan. The challenge for a mainstream American pediatrician is to know which ones are safe and unlikely to interact negatively with standard treatments.


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Coffee and tea. In the 1800s coffee was the treatment of choice for asthma. Epidemiologic data support a relationship between coffee intake and reduced respiratory symptoms that may be mediated through coffee's xanthine content. Caffeine is chemically related to theophylline. Like theophylline, it increases intracellular cyclic adenosine monophosphate (cAMP) and thereby relaxes bronchial smooth muscles. In a large Italian study, adults who drank two to three cups of coffee daily had about 25% less asthma than adults who abstained.[3] American data support a dose-effect association between coffee intake and a reduced risk of asthmatic symptoms. There are no recent, randomized controlled trials evaluating the effects of caffeine on childhood asthma symptoms, nor on the interaction between coffee, tea, colas, and modern asthma medications.

Shinpi-to and saiboku-to. Clinical trials indicate some steroid-sparing effects of the ancient Chinese herbal combination remedy, saiboku-to, reducing the need for anti-inflammatory medications in adult asthmatics taking it over several months. Saiboku-to contains five herbs that slow steroid breakdown, possibly increasing the risk of side effects (or decreasing dosage requirements) in patients dependent on oral steroids. Like the new asthma drug zileuton, saiboku-to and shinpi-to, another Chinese herbal asthma remedy, inhibit 5-lipoxygenase and thus the synthesis of the pro-inflammatory leukotrienes.[4]

Ma huang *(Ephedra sinica).* This herb has been an asthma remedy in China for over 5,000 years. Ephedrine, ma huang's principle active ingredient, was included in mainstream medical therapies for pediatric asthma until the mid-1980s when it was replaced by more specific β-agonist medications that had fewer cardiovascular side effects. It continues to be a mainstay of natural herbal asthma remedies when used in combination with anti-inflammatory herbs such as licorice root. Ephedra gained notoriety in the 1990s as adolescents tried using it as a natural high. The US Food and Drug Administration has received over 600 complaints of adverse effects, including 22 deaths, related to ephedra, a situation that has led to tighter state regulations on the availability and strength of ephedra-containing products as well as a warning from the FDA.

Licorice root *(Glycyrrhiza glabra radix).* Folk medicines around the world use licorice root to treat coughs. The herb's active compounds, glycyrrhetinic acid and carbenoxolone, are potent inhibitors of cortisol metabolism, thereby enhancing endogenous and exogenous steroid benefits and side effects. As recently as the 1960s, licorice was used successfully by American physicians to treat Addison's disease. Because of its inhibitory effects on steroid breakdown, side effects of licorice include fluid retention, peripheral edema, hypertension, headaches, hypokalemia, lethargy, and muscle weakness. Similar effects were seen when troleandomycin (TAO), a macrolide antibiotic, was used in combination with methylprednisolone. TAO delayed steroid breakdown and improved asthma symptoms, but also enhanced steroid side effects; this led most clinicians to abandon TAO as an adjunct in asthma treatment. No studies have yet evaluated the risks


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Rx Take-home message

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and benefits of including licorice root in a standard pediatric treatment regimen for asthma. Patients using licorice should be closely monitored for steroid-like side effects.

Coleus forskohlii. This herb is used in Ayurvedic medicine to treat asthma. Like theophylline, it increases intracellular cAMP and is an effective bronchodilator.[5] Another Ayurvedic herbal remedy, *Tylophora indica*, has proven beneficial in controlled, double-blind cross-over studies, but the most effective dosages and long-term effects on children are unknown.[6]

Gingko biloba. This is one of the most widely used herbal remedies in Europe. Standardized extract of *Gingko biloba* (EGb), is sold under several different brand names: Ginkgobil, Rokan, Tanakan, Tebonin, and Kaveri. Ginkgo's active ingredient, ginkgolide, antagonizes platelet activating factor (PAF), and may decrease airway inflammation. Ginkgo is also a powerful antioxidant. Although *Gingko biloba* has a long history and a reasonable biochemical rationale, only one small pilot study has evaluated its effectiveness as an asthma remedy. That study found it protective against exercise-induced bronchospasm; it also decreased participants' reactivity to house dust mite antigen.[7] Its long-term use is still experimental.

***Onions** (Allium cepa).* Nine different compounds isolated from this common folk remedy inhibit leukotriene synthesis in vitro. Crude onion extracts reduce experimentally induced bronchoconstriction in guinea pigs.[8] Onions are extremely safe and well tolerated in normal diets. Hypersensitivity is rare. Additional research is needed to determine the best dose and frequency of onion supplements for asthmatic children.

Bee pollen. This substance has been widely touted as a natural remedy for atopic diseases. There are no clinical trials evaluating its effectiveness in treating childhood asthma. Serious allergic reactions and even fatalities have been reported. This is *not* a safe adjunctive therapy for asthmatic patients.

Herbal products are not regulated by the FDA. Consumers who rely on them must beware of the potential for variations in purity and potency, and contamination with other herbs, insects, pesticides, herbicides, heavy metals, and even medications. Consumers need to understand that herbal products are not necessarily safe (or organic) simply because they are natural. Evidence for the safety and efficacy

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TABLE 3

Evidence on herbal remedies

Herb	Randomized controlled trials	Benefits demonstrated	Side effects/ drug interactions	Purported mechanism
Coffee/tea	None recently in children	Epidemiologic data suggest fewer symptoms in coffee drinkers	Tachycardia, insomnia, jitters, decreased appetite, potential interaction with β-agonist	Methylxanthines Increased intracellular cAMP Bronchodilator
Shinpi-to	None in children	Yes, in historical data	Unknown. Potential increase in steroid side effects	Inhibits 11 β-hydroxylase Blocks 5-lipooxygenase Inhibits platelet activating factor (PAF)
Ma huang *(Ephedra sinica)*	Yes	Yes	Cardiovascular and CNS toxicity Deaths reported Potential interaction with β-agonists	β-agonist Bronchodilator
Licorice root *(Glycyrrhiza glabra radix)*	No	Case series suggests steroid-sparing effects	Pseudohyperaldosteronism Hypertension Peripheral edema Potential increase in steroid side effects	Inhibits 11 β-hydroxylase and cortisol breakdown
Coleus forskohlii	No	Yes, in case series in adults	Unknown	Decreases cAMP metabolism Bronchodilator
Tylophora indica	Yes, in adults	Yes	Unknown	Unknown
Gingko biloba	No	Yes, in pilot study	Unknown	PAF antagonist Antioxidant
Onions *(Allium cepa)*	No	Yes, in vitro Animal data support use	Hypersensitivity (rarely)	Blocks leukotriene synthesis
Bee pollen	No	No	Anaphylaxis	Unknown

of herbal remedies for asthma is summarized in Table 3.

Nutritional supplements

The vitamins and minerals most commonly recommended for asthma include vitamin B_6, vitamin C, magnesium, and selenium. Salt restriction is also recommended.

Vitamins. In a double-blind, placebo-controlled study of steroid-dependent adult asthmatics, 300 mg of pyridoxine (Vitamin B_6) supplements taken daily significantly improved morning peak flow rates. There was no benefit on acute symptoms. In a case series of adult asthmatics who had low serum

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levels of pyridoxine, supplementation led to fewer and less severe wheezing episodes. Pyridoxine supplements of 200 mg per day reduced the number of asthma attacks, the severity of symptoms, and the need for medications in a double-blind study of 76 asthmatic children.[9] Side effects are rare with these doses. Pyridoxine supplements may be particularly helpful for children whose serum levels of pyridoxal phosphate have been depleted by chronic theophylline use.

Antioxidant vitamins are commonly suggested complementary therapies for asthma. Adults whose diets are naturally high in antioxidants such as vitamin C– and vitamin E–rich foods have the fewest pulmonary problems. Six months of daily vitamin C (1 g per day) failed to reduce asthma symptoms in one study, but did reduce

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them in another double-blind comparison trial. In some children, 500 mg of oral vitamin C has a protective effect against exercise-induced asthma.[10] Taking 500 to 1,000 mg per day is probably safe for most children, although higher doses may lead to diarrhea. Additional studies are necessary to determine the effectiveness and optimal dosing, frequency, and duration of vitamin C supplementation.

Magnesium. Dietary magnesium intake is strongly correlated with asthma symptoms; the more magnesium, the fewer the symptoms. Intravenous magnesium has proven helpful in treating pediatric status asthmaticus. In a randomized, controlled, double-blind cross-over study of oral magnesium supplementation (400 mg daily) in adults, there was a statistically significant improvement in asthma symptoms and a small reduction in bronchodilator requirements, but no significant change in pulmonary function tests during the three weeks of treatment.[11] Additional prospective, controlled studies are needed to evaluate the effectiveness and safety of oral magnesium supplements in preventing childhood asthma episodes.

Selenium. Plasma and erythrocyte levels of selenium and the activity of the selenium-dependent enzyme glutathione reductase are lower in asthmatic adults than in nonasthmatics. However, no clinical trials document benefits to pediatric asthma patients from selenium supplements.

Salt restriction. While bronchial sensitivity to methacholine is increased by high salt intakes, a pediatric case control study found no association between levels of salt intake and asthma or exercise-induced bronchospasm. Studies are not strong enough to suggest that asthmatic children should severely restrict their salt intake.

Fatty acids. Omega-3 fatty acids (found in fish oils, canola oil, and flax seed oil) have been touted as important anti-inflammatory food


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supplements. Omega-3 fatty acids limit leukotriene synthesis by blocking arachidonic acid metabolism. Eating fresh oily fish (cod, mullet, orange roughy, salmon, tuna, mackerel, rainbow trout) is associated with a significantly reduced risk of asthma and improved pulmonary function in large epidemiologic studies in both adults and children.[12] In a long-term, double-blind trial of supplementation with one g daily of fish oil in adult asthmatics, pulmonary function tests did not improve until the ninth month of treatment.[13] Many asthmatics may consider this too long to wait. Canned fish and salad bar shrimp containing sulfites should be avoided in sensitive asthmatics. However, fresh fish is generally well tolerated and can be reasonably recommended as part of a life-long healthy diet. Additional research is needed before recommending routine supplementation with fish oil capsules for asthma. Evidence for the safety and efficacy of nutri-

TABLE 4

Evidence on nutritional supplements

	Randomized controlled trials	Benefits demonstrated	Side effects/ drug interactions	Purported mechanism
Vitamin				
Vitamin B_6 (pyroxidine)	Yes	Yes, in mild disease or if taken for at least 4 wk	Large doses may cause peripheral neuropathy	Tryptophan metabolism
Vitamin C	Yes	Mixed results	Diarrhea with overdoses	Antioxidant
Mineral				
Magnesium	Yes	Yes, for acute asthma when given IV Mixed data for oral supplementation	High doses may cause nausea, hypotension, muscle weakness	Smooth muscle relaxant
Selenium	No	No	Alopecia, liver disease, cardiomyopathy, fatigue, nail loss, nausea	Antioxidant
Salt restriction	No	No. High salt intakes associated with increased symptoms in adults	Hypertension with high salt intake	Unknown
Other				
Fish oil (omega-3 fatty acids)	Yes	Mixed results Up to 9 mo of supplementation may be needed	Rare increased bleeding	Leukotriene synthesis

tional supplements is summarized in Table 4.

Lifestyle therapies

Lifestyle therapies that address the asthmatic child's environment are central to the control and prevention of asthma symptoms in mainstream medicine. Unfortunately, there is no alternative therapy for housecleaning, although many CAM enthusiasts wish there were. CAM lifestyle recommendations, in addition to environmental measures, generally involve three areas: diet, exercise, and mind-body therapies.

Diet. Many families blame food allergies for asthmatic symptoms, even though only 2% to 3% of patients react to double-blind, placebo-controlled food challenges. Some CAM enthusiasts routinely advise asthmatics to follow elimination diets (restricting major allergenic foods), minimal diets (allowing only a very small number of foods), vegan diets, or diets excluding putative triggers (such as dairy products).[14,15] Despite the lack of evidence from food challenge tests, recommending dietary changes has a powerful effect. In a study of adult asthmatics, 79% of respondents who had tried a restricted diet reported improvement in their asthma symp-

toms. While restricted diets may be helpful in a minority of patients, they should be strictly supervised by a nutritionist and limited to brief trials to prevent deficiencies. In the absence of documented food allergies, there is no conclusive evidence that restricted diets are helpful in reducing asthma symptoms.

Dairy products are often blamed for inducing respiratory symptoms and restricted in the diet of patients with asthma. However, among adult asthmatic patients who believed their symptoms were triggered by dairy foods, milk was not significantly more likely than placebo to trigger symptoms in randomized, blinded challenges.[16] Dairy restriction is potentially dangerous for children with steroid-dependent asthma, who need calcium's protective effects to maintain bone density. No controlled trials indicate significant benefits to eliminating dairy products from the diets of most children with asthma.

Exercise. Nearly 90% of asthmatics find that exercise, especially in cold, dry air, triggers symptoms. Nevertheless, the benefits of cardiovascular fitness are so important that children with asthma should be encouraged to exercise. Asthma is easier to control in patients who are physically well conditioned, and asthmatic symptoms triggered by exercise can be readily controlled. Many Olympic-caliber athletes have asthma and have set world records for athletic performance.

Despite theoretical concerns about eliciting the diving reflex or chlorine-precipitated bronchospasm, swimming is commonly recommended as beneficial exercise for asthmatic children. Studies of swimming programs have not demonstrated that swimming is better than other aerobic conditioning programs, but they generally indicate longitudinal improvements in overall fitness, swimming ability, and self-esteem. Spa treatments (swimming in hot spring or mineral water) may be even better. In a cohort study of adults with severe, steroid-dependent asthma who received spa therapy, 69% experienced significant clinical improvement; rates of improvement were even higher among older patients (41 to 60 years of age) and those with more severe disease.[17] Similar studies have not been done in children, nor are insurance companies likely to race to reimburse this form of therapy.

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Controlled breathing. Yoga, particularly yogic breathing (pranayama), may help reduce the frequency of asthma attacks.[18] Yoga breathing exercises emphasize slow, regular breaths in which the ratio of inhalation to exhalation is 1:2; inhaling hot, moist air can enhance the benefits.[19] Long-term (one to four years) follow-up of asthmatic adults indicated sustained improvement in pulmonary function and exercise tolerance and decreased reliance on rescue medications following a four-week yoga therapy training program.[20] A randomized, controlled trial of yoga training in young adult asthmatics resulted in greater calm, improved attitudes, enhanced exercise tolerance, decreased asthma symptoms, and decreased use of asthma medications, but no changes in pulmonary function tests.[21] Additional studies are needed to determine the most effective components, duration, and frequency of training and practice, but these exercises are safe for patients who are interested in exploring alternative exercise programs.

Other types of breathing exercises frequently suggested for asthma combine aspects of physical training and mind-body interventions. Training may include voice lessons to improve breath control and functioning of the diaphragm through relaxation and postural changes. In a randomized, controlled trial of German adults with mild asthma, breathing exercises significantly improved pulmonary function. These long-term improvements were comparable to the short-term benefits of inhaled β-agonist medications.

A recent breathing exercise fad in the popular press and on the Internet is Buteyko breathing. This technique is named after a Russian physician, Konstantin Buteyko, who believed that "over-breathing" or deep breaths cause a number of diseases, including asthma, and that to reduce asthma symptoms, pa-

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tients should be trained to "breathe less."[22] This is nonsense. Nevertheless, since your patients are likely to encounter moving testimonials about this technique, you should be familiar with it. Information about Buteyko is available on the web at *www.buteyko.com.*

Environmental manipulation. While there is plenty of evidence to support reducing exposure to dust mites, cockroaches, animal danders, and other allergens and sensitizers in the environment, claims are being made for alternative devices that purport to purify the environment. No studies support the use of such devices as ozone or ion generators, vaporizers, aromatherapy, magnets, or radionic devices. On the positive side, there are no known adverse effects of these therapies, either.

Mind-body therapies. Children with asthma are more likely to have symptoms when they are stressed. Stress management can take a variety of forms and may be helpful for both parents and children. Transcendental meditation has proven helpful in improving pulmonary function among adult asthmatics who practice it regularly. Progressive relaxation training augments the benefits of a comprehensive asthma management program for children. Autogenic training (in which patients silently repeat relaxing affirmations) can also help manage stress and improve pulmonary function when practiced over several months. Just three sessions of systematic relaxation training improved pulmonary functions in asthmatic children more than three sessions of simply sitting quietly.[23]

℞ Take-home message

The benefits of cardiovascular fitness are so important that children with asthma should be encouraged to exercise.

Hypnosis has proven useful in improving symptoms and pulmonary function, enhancing parental confidence in managing their children's asthma, and reducing the amount of medication and number of physician visits for asthmatic children, even preschoolers.[24] Physicians experienced in using clinical hypnosis may help patients reduce reactivity to allergens, reliance on oral steroids, and even rates of hospitalization. Most claims are of modest symptomatic relief, with few complete cures. Additional studies are needed to assess types of training, frequency, and duration, and the patients for whom hypnosis is most likely to be helpful.

Asthmatic children can learn to reduce air-flow resistance through biofeedback training. Regularly practicing biofeedback can improve attitudes about asthma, reduce anxiety levels, reduce the frequency

TABLE 5

Evaluating lifestyle therapies

Therapy	Benefits demonstrated	Risk
Diet		
Vegan, macrobiotic, vegetarian, elimination diets	Strong placebo effect No controlled trials in children	Nutritional deficiencies
Non-dairy diet	Possible, in children with known allergy to dairy foods	Nutritional deficiencies, especially calcium
Exercise		
Swimming	No proven asthma benefit compared with other conditioning programs Improves general conditioning	Same as for children without asthma
Yoga breathing exercises	Effective in adolescents and young adults in controlling asthma symptoms and improving pulmonary function	None except time needed for practice
Other breathing exercises	Helpful in adults No studies in children	None except time needed for practice
Environment		
Avoiding triggers	Yes	Cost and inconvenience
Ion generators, ozone devices, radionic devices, magnets, aromatherapy, vaporizers	No proven effectiveness in adults or children	Cost
Mind-body		
Autogenic training	Yes in adults No studies in children	Time for ongoing practice
Biofeedback	Yes in children and adults	Time for ongoing practice
Hypnosis/guided imagery	Yes, even in very young children	Time for ongoing practice
Meditation	Yes in adults No studies in children	Time for ongoing practice
Progressive relaxation	Yes in adults and children	Time for ongoing practice

and severity of asthma symptoms, and lower medication use and emergency room visits.[25] The types, duration, and frequency of biofeedback training and patients most likely to benefit remain unknown.

Stress reduction and mind-body treatments work only when practiced regularly, so families must be committed and persistent in following these programs. Try to find out what kind of therapies appeal to your patients, so that they choose treatments they are likely to keep up. Additional studies are needed to assess the most effective types of therapy for children of different ages. The pros and cons of these

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lifestyle therapies are summarized in Table 5 on page 186.

Joints, muscles, and energy fields

Biomechanical and bioenergetic therapies rely on manipulation of the patient's body and of unseen energy fields believed to influence health and disease.

Massage. This traditional therapeutic modality not only feels good but has been shown to reduce stress and anxiety. In a recent randomized, controlled trial, 20 minutes of massage given by parents at bedtime for a month helped improve children's pulmonary function tests, even compared with standard relaxation exercises.[26] The necessary frequency, duration, and long-term benefits of massage therapy remain unknown. However, when parents do the massage, costs and side effects are minimal. You can safely recommend this complementary therapy for families to try.

Chiropractic. Some chiropractors claim to benefit a variety of clinical conditions, including asthma. Only one randomized clinical trial has investigated this claim; it did not find that real chiropractic therapy offered any benefit beyond sham chiropractic. There is no scientific basis for recommending chiropractic therapy for the relief of asthma symptoms in children. It offers no proven clinical benefit, and may—because of frequent visits and X-rays—increases healthcare costs and dependence on health professionals.

Acupuncture. All of the bioenergetic therapies rely on a belief in an unseen vital or healing energy that affects patients' health and well-being. Practitioners can affect the flow, amount, or intensity of this healing energy through a variety of techniques.

In acupuncture, the vital energy, known as qi or chi, flows through channels and can be balanced by proper placement and stimulation of acupuncture needles. Traditional Chinese medical practitioners claim that asthma is one of the conditions most amenable to acupuncture, but data from controlled trials offer conflicting results. Most clinical trials have not been methodologically rigorous but do support a modest role for acupuncture for adult asthmatics.[27] In one case series, acupuncture was effective in aborting acute attacks if the needle sensation was felt strongly and needles were left in place with frequent stimulation for 15 to 60 minutes. In one controlled trial, true acupuncture performed 20 minutes before exercise was more effective than sham needling in reducing exercise-induced asthma.[28] Another study, on the contrary, found no benefits of acupuncture in preventing exercise-induced bronchospasm.

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Adverse effects of acupuncture are exceedingly rare. A MedLine search for the years 1981 to 1994 revealed a total of 193 patients with reported adverse events. These included several pneumothoraces, one of which led to death, and an additional death from status asthmaticus. Although these side effects are rare, they underscore the importance of regarding acupuncture as an experimental, adjunctive therapy and cautioning patients against substituting acupuncture for conventional medical care.

Healing touch and prayer. These are commonly used healing techniques in nearly every culture. In healing touch, reiki, and noncontact therapeutic touch, healers transmit healing energy through their beneficent intent, focusing the flow of energy through their hands. Prayer does not require the use of hands or even the physical presence of the healer to intervene with spiritual powers or unseen forces. We were able to find only one study that evaluated the effectiveness of healing touch or prayer on patients with asthma. In an uncontrolled pilot study performed in Germany, 12 patients all received treatments from a healer who placed his hand on the patients' chests for one to three minutes of healing; an average of 17 to 18 treatments were given over an eight-week period. Most patients felt improved and several were able to reduce their use of medication.[29] Regardless of whether or not one believes in a healing energy, these

TABLE 6

Evaluating biomechanical and bioenergetic therapies

Therapy	Benefits demonstrated	Risk
Biomechanical		
Massage	Yes, even in children when provided by trained parents	None
Spinal manipulation	Anecdotal evidence only	Cost, X-ray exposure
Bioenergetic		
Acupuncture	Conflicting data More studies needed	Cost; very rare needle breakage, pneumothorax, infection
Healing touch	Positive results in one case series No controlled trials in children	None
Prayer	No controlled trials in children	None
Homeopathy	One study with minimal positive impact in adult asthmatics No studies in children	None

types of treatments certainly appear to be safe as long as patients do not abandon mainstream medical therapies without consulting their physician.

Homeopathy. This mode of treatment is not based on classical chemical or physical laws, but on the two principles of "like cures like" and the "law of dilutions." The first principle means that a remedy is chosen because of its tendency to cause the same symptoms patients experience as part of their illness. The second means that the remedy gains in potency the more dilutions it undergoes; the most potent remedies are those that are diluted to the point at which they contain *no* molecules of the therapeutic compound. Homeopathy fits into the bioenergetic category because pracitioners believe that dilution imparts and amplifies healing energy or information from the original remedy to the diluted medication. That healing energy is then used by the patient's inner self to encourage healing.

A 1994 placebo-controlled trial of homeopathy in the treatment of adults with allergic asthma concluded that true homeopathy was superior to placebo in reducing asthmatic symptoms. Pulmonary function tests showed no significant differences, however. No studies have evaluated the effectiveness of homeopathy in treating children with asthma. Homeopathic remedies may be assumed to be quite safe biochemically, and may be a harmless, inexpensive, and useful placebo. They cannot be recommended as active therapy or replacement for standard treatment, however. The evidence for effectiveness and risk of these biomechanical and bioenergetic therapies is summarized in Table 6.

Summing up the evidence

Complementary and alternative medical therapies are used frequently by children suffering from chronic illnesses such as asthma. Many herbs and nutritional supplements are similar to or have become mainstream medical therapies. Combination herbs containing anti-inflammatory compounds may reduce dosage requirements for standard medications, but could potentiate the side effects of oral steroids. Herbal adrenergic stimulants run the risk of serious side effects. Nutritional supplements such as vitamin B_6, Vitamin C, magnesium, and fish oil may be helpful but are no substitute for a healthy diet. More research is needed to ascertain how best to integrate nutritional supplements into mainstream care for children with asthma, both to promote effectiveness and to reduce side effects and costs. Safe recommendations include a diet containing plenty of antioxidant-rich fresh fruits, onions and other vegetables, and fatty fish.

Exercise, including yoga and breathing exercises, should be encouraged for children with asthma. Effective environmental therapies stress avoidance of allergens and

other triggers. Stress management is important; a variety of techniques may be helpful, depending on patient preferences. Massage therapy appears promising, at minimal cost and little risk of side effects. Acupuncture cannot be routinely recommended without additional research in children but need not be discouraged. Prayer and healing touch have not undergone rigorous study, but are safe ancillary therapies. Homeopathy may offer an inexpensive placebo, but has not been adequately tested in children.

New fads are bound to come along with extravagant claims for effectiveness. While some alternative treatments may offer modest benefit for helping children with chronic asthma, none are recommended as a replacement for standard medical therapies and none should be the sole treatment for acute symptoms. Asthma management plans should stress prompt medical care if symptoms persist or worsen on existing treatments. □

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