



Complimentary and Alternative Medicine (CAM)

Complimentary and Alternative Medicine is "complimentary and alternative" to allopathic medicine which is the modern Western approach to medicine, based on scientific testing and reporting. It arose in the early twentieth century and is what we think of "medicine" today, that is surgical, radiological, anesthetic, imaging, pharmacological and other therapies.

Homeopathy, by contrast, became associated with what are often termed "natural healing" practices.

Now more than half of all Americans are currently using some form of CAM. The American Academy of Orthopaedic Surgeons has felt there is an increasing need for orthopaedic surgeons to become familiar with the various alternative modalities so they can effectively and intelligently answer patient's questions regarding their effectiveness or potential dangers. A complimentary and alternative medicine web page is now posted on the AAOS web site. (See AAOS link) The new site developed by the American Academy of Orthopaedic Surgeons Committee on Complimentary and Alternative Medicine houses a wealth of information on CAM as it relates to the practice of orthopaedics including herbal drug interactions, available scientific evidence, frequently asked questions, and useful web links.

The Journal of the American Medical Association (JAMA) recently reported that between 1990 and 1997 the prevalence of herbal remedy use increased 380% in the United States. The out of pocket expenses for CAM professional services were estimated at 12.2 billion dollars.

Jonathan Moss, M.D., Ph.D. is Professor of Anesthesia and Critical Care at the University of Chicago. He believes that herbal medications can be very biologically important and really should be treated as drugs. There are no placebo controlled double blind trials on the effect of herbals on surgical outcomes and side effects.

In the last year in the United States 35 billion dollars was spent on combined drugs and procedures that the medical establishment labels complimentary or alternative medicine (CAM).

The area covered by that blanket term, CAM, is huge. The National Institutes of Health divides the alternative medicine system into a number of categories.

Homeopathy -

Practitioners treat disease using drugs, which given to healthy persons in minute doses would produce symptoms similar to those of the disease.

Naturopathy and Traditional Folk Based -

This approach views disease as a disruption in the process by which the body naturally heals itself. Practitioners use a variety of techniques aimed at restoring



health rather than treating disease.

Body Based Systems -

Chiropractic, Acupuncture, Massage.

Mind/Body Systems -

Hypnosis, Biofeedback, Meditation.

Biologically Based -

These are pharmacological, herbal and nutritional regimes including commercial diets used to prevent or control illness as well as to promote health.

Bio Electromagnetic -

This technique uses magnets for the delivery of electromagnetic currents.

The concern among orthopaedic surgeons, such as myself, is that morbidity and mortality associated with herbal medicines may be more likely in the perioperative period because of the polypharmacology and physiologic alterations that occur.

Such complications include myocardial infarction, stroke, bleeding, inadequate oral anticoagulation, prolonged or inadequate anesthesia, organ transplant rejection, and interference with medication indispensable for patient care.

Most patients may not volunteer that they are taking herbal medications in the preoperative evaluation. There is a reluctance to mention over the counter supplements as patients feel their doctors would know little or nothing about the supplements and might be biased against them. Almost half of the adults in the United States regularly take at least one vitamin, herb, mineral, or over the counter supplement, but most of them do not tell their physicians.

It is very important during the preoperative evaluation that physicians specifically elicit and document a history of herbal medication use. Physicians must be familiar with the potential perioperative effects of the commonly used herbal medications to prevent, recognize, and treat potentially serious problems associated with their use and with their discontinuation. For some reason patients undergoing surgery appear to use herbal medications significantly more frequently than the general population. Herbal medications were classified as dietary supplements in the Dietary Supplement Health and Education Act of 1994. The law exempts herbal medications from the safety and efficacy requirements and regulations that prescription and over the counter drugs must fulfill. The burden has shifted to the U.S. Food and Drug Administration to show that a product is unsafe before it can be removed from the market. The inability to patent herbal medications discourages manufacturers from performing costly research required for conventional drugs.

The potency of herbal medications can vary from manufacturer to manufacturer and from lot to lot within a manufacturer. Because there is no mechanism for post marketing surveillance the incidents and exact nature of adverse effects is unknown.



It is estimated that there are fifteen hundred to eighteen hundred single herb medications sold in the United States. This does not include non-herbal dietary supplements such as vitamins, minerals, amino acids, and hormones.

The non-herbal dietary supplements that our orthopaedic surgery patients are most likely to take such as Glucosamine and Chondroitin for osteoarthritis, appear to be safe and have no adverse effect in the surgical population.

Eight Commonly Used Herbal Medications

Despite uncertainties in commercial preparations, herbal medications adhere to modern pharmacological principles. Herbal medication may adversely affect the patient during the perioperative period through several mechanisms such as direct pharmacological effects, alteration of the action of conventional drugs, alteration of the absorption, distribution and metabolism and elimination of conventional drugs.

ECHINACEA

Three species of echinacea, a member of the daisy family, are used for prophylaxis and treatment of viral, bacterial, and fungal infections of the upper respiratory tract.

Some studies have demonstrated a number of immunostimulatory affects. While there are no studies specifically looking interaction between Echinacea and immunosuppressive drugs, opinion is that Echinacea and immunosuppressive drugs should not be used because of the probability of diminished effectiveness of the immunosuppressive drug.

Echinacea has been associated at times with allergic reactions and therefore should be used with caution in patients with asthma or allergic rhinitis.

Concerns have been stated regarding potential hepatotoxicity, but there are no documented cases to my knowledge.

It would make sense to discontinue taking Echinacea at least two weeks prior to surgery because there is concern that with longer term use of Echinacea the potential for immunosuppression exists and theoretically therefore, concern for certain post-surgical complications such as poor wound healing and opportunistic infection.

EPHEDRA

Ephedra is a shrub found in Central Asia and is used to promote weight loss, increased energy, and treat respiratory tract infections such as bronchitis. Ephedrine is the prominent active compound that has dose dependent effects on blood pressure and heart rate.

The unsupervised preoperative use of Ephedra raises concerns regarding vasoconstriction and in some cases, vasospasm of coronary and cerebral arteries which may cause myocardial infarction and thrombotic stroke.

The pharmacology of Ephedrine has been studied extensively in humans. Based on the data and known cardiovascular risks of Ephedra including myocardial infarction, stroke,



and cardiovascular collapse from catecholamine depletion, patients taking this herb should discontinue use at least twenty-four hours prior to surgery.

GARLIC

Garlic is an extensively researched medicinal plant. It is thought to have the potential to modify the risk of developing atherosclerosis by reducing blood pressure and thrombus formation and lowering triglyceride and cholesterol levels. These effects are primarily attributed to the sulfur containing compounds in garlic.

Garlic inhibits platelet aggregation in a dose dependent fashion.

In addition to concerns about bleeding, garlic has the potential to lower blood pressure. Some feel the anti-hypertensive effect of garlic is marginal.

It would be wise for a person taking garlic to discontinue use at least seven days prior to surgery, especially if post-operative bleeding is a particular concern or other platelet inhibitors are given.

GINKGO

Ginkgo is derived from the leaf of Ginkgo biloba. It has been used for cognitive disorders, peripheral vascular disease and several other conditions.

While Ginkgo appears to have several effects it primarily acts as an antioxidant and modulates a neurotransmitter and receptor activity as well as inhibits platelet-activating factors.

Of these effects inhibiting platelet activating factor is the greatest concern in the perioperative period.

Based on data and the risk of bleeding in the surgical population, the patient should discontinue taking Ginkgo at least thirty-six hours prior to surgery.

GINSENG

Ginseng has been labeled as an adaptogen since it reputedly protects the body against stress. Ginseng has a very broad, but incompletely understood pharmacological profile. There is a concern about the effect of Ginseng on coagulation pathways. Based on the known elimination half-life of Ginseng, the patient should discontinue this at least twenty-four hours prior to surgery.

KAVA

Kava is derived from the dried root of the pepper plant. Clinical trials suggest that Kava has a therapeutic potential in the treatment of anxiety.

Because of these psychomotor effects, Kava was one of the first herbal medications expected to interact with anesthetics.

It has come to our attention that Kava status in Germany has been changed to be available only by prescription. This has not yet occurred in the United States.



Data suggests that the possibility for potentiation of the sedative effects of anesthetics with the use of Kava exist. Patients taking Kava should discontinue use at least twenty-four hours prior to surgery.

ST. JOHNS WORT

There have been a number of clinical trials reporting efficacy in the short-term treatment of mild to moderate depression.

A multi-center clinical trial concluded that St. Johns Wort is not effective in the treatment of major depression.

St. Johns Wort exerts its effects by inhibiting serotonin, norepinephrine, and dopamine reuptake by neurons.

The use of St. Johns Wort can significantly increase the metabolism of many drugs, some of which are vital to the perioperative care of patients.

Because of its long half-life and alteration in the metabolism of many drugs, St. Johns Wort should not be used in the perioperative setting. Patients taking this herbal medication should discontinue it at least five days prior to surgery and patients should be told to avoid taking it during the post-operative period as well.

VALERIAN

Valerian is an herb native to parts of the Americas, Europe, and Asia. It is used as a sedative particularly in the treatment of insomnia and virtually all herbal sleep remedies contain Valer. The effects are thought to be short lived.

Valerian produces dose dependent sedation and hypnosis. Valerian should be expected to potentiate the sedative effects of anesthetics. It would be prudent to taper the dose of Valerian during several weeks prior to surgery

The Problem

Patients usually do not volunteer that they are taking herbal medications when they are evaluated preoperatively. Physicians should specifically elicit and document a history of herbal medication use, but this may be difficult. Most patients will fail to report information on herbal medications if presented with a written questionnaire.

Oral history, however, also has been shown to be inadequate because unless information is directly solicited patients usually will not be forthcoming with information. Even when the history is obtained and the patient acknowledges use of herbal medications a significant percentage of patients are unable to properly identify the preparations they are taking.

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preparations they are taking.

Therefore, the only way to be sure what patients are taking when they are being evaluated preoperatively is to ask them to bring their herbal medications and other supplements with them to the evaluation.

The American Society of Anesthesiologists while having no official standards or guidelines on the preoperative use of herbal medications, has released education information suggesting that patients discontinue herbal medications at least two to three weeks prior to surgery.

Perhaps a more targeted approach would be more effective. Some of the herbal medications are eliminated quickly and may be discontinued closer to the time of surgery.

Patients are usually not evaluated two to three weeks before elective surgery.

Ultimately, the high frequency of herbal medication use among preoperative patients probably means that these patients will continue to take their herbal medications right up to the time of surgery. We as physicians must become increasingly aware of these herbal medications and the treatment of complications that may arise.

The task of caring perioperatively for patients who use herbal medications is an ongoing and evolving challenge.

Many practicing physicians remain unaware of the potential perioperative complications of herbal medication use. Information is important to prevent, recognize, and treat potentially serious problems associated with herbal medications whether they are taken alone or in conjunction with conventional medications.

In closing, we would like you to know that in 1993 the Office of Alternative Medicine was established and in 1998 the United States Congress elevated it to the National Center for Complimentary and Alternative Medicine at the National Institutes of Health (NIH).

In 1998 seventy-five of one hundred seventeen medical schools in the United States offered elective courses in Complimentary and Alternative Medicine or included CAM topics in required courses.

Also in 1998, with NIH funds that went to only a few other such units nationwide, The University of Michigan Complimentary and Alternative Medicine Research Center was established at The University of Michigan.

Once dismissed as quackery, the thirty-five billion dollar (holistic) folk based therapies have awakened the interest of the health care establishment and will continue to generate the attention of traditional medicine well into the future.

Dietary Supplements

There is a controversy brewing which concerns the Food and Drug Administration (FDA) regulating dietary supplements. Those people who favor regulation of dietary



supplements by the FDA point out that patients are using dietary supplements in the same way they use prescription drugs, that is to treat, cure, or prevent diseases. It is clear that these substances are not subjected to the same standards as pharmaceuticals.

In 1994 Congress passed the Dietary Supplement Health Education Act (DSHEA). Before passage of this act the FDA regulated dietary supplements as foods.

With passage of DSHEA a separate set of legal rules for dietary supplements, including herbal medicinals, was established. These rules are different from those governing food or drugs.

The FDA's authority to evaluate the safety and efficacy of these substances was removed. Supplements are not required to meet the same manufacture and practices that had been established for pharmaceuticals.

In January 2000 the FDA established new labeling regulations which permit manufactures to make only structure or function claims for supplements. The products are required to state that they are not intended to diagnose, treat, cure, or prevent any disease.

Many people are concerned that without FDA control, many of the products may not be of high quality or purity. Most persons realize herbal medicinals are subject to a high degree of variation. Some products have been found to have a ten-fold variation in the amount of active ingredient while others have none. These are extreme examples, of course.

Many manufacturers produce quality products and set their own quality standards. Many feel that relying on voluntary compliance does not protect public safety. Certainly at this point, patients are not able to rely on the safety, efficacy, and quality of dietary supplements as they do for prescription and non-prescription drugs.

Those who are not in favor of FDA regulation of dietary supplements point out that DSHEA improved consumer access to dietary supplements and information about them, and increased consumer protection against unsafe products and false or misleading claims.

The Federal Trade Commission has authority over what manufacturers say about their products in advertising or on the Internet.

People who feel that more regulation is not required say that the dietary supplement industry has taken unprecedented action in implementing standards for self-regulation including regular, independent lab testing of products for safety and authenticity.

Undoubtedly the debate will continue as the use of dietary supplements increases by our patients. Our patients should be aware that these dietary supplements are regulated as foods and not as pharmaceuticals. As long as this is the case we will never be able to rely on supplements to be as effective as pharmaceuticals. It just isn't going to happen.



This is not to say that they are not, in some cases, worthwhile or they cannot help people. They can, but they are not going to reach the same level of effectiveness in the general population as pharmaceuticals.

It has very recently been announced that the White House Commission on complementary and alternative medicine is in the process of drafting recommendations that will call for a broad package of policy changes at the federal and state levels designed to improve the quality of alternative medicine.

Draft recommendations urge the federal government to provide more money for controlled studies designed to tell if and in which patients alternative therapies work.

Experts want congress to boost funds for the National Center for Alternative and Complementary Medicine at the National Institutes of Health. The White House commission is chaired by Dr. James S. Gordon. He said the safety and efficacy of alternative therapies should be neither higher nor lower than research backing traditional drugs and treatments. The commission will recommend that the FDA strengthen its adverse events reporting regimen and that companies do more to report possible side effects and make sure the ingredients advertised on the label is what is in the bottle.

The draft calls on medical schools to offer courses in alternative medicine designed to familiarize physicians with the growing field. The recommendations stress the need for a comprehensive database of information on alternative medicine that is easily accessible to consumers and their physicians.

It certainly would make sense if this information were available to patients as well as physicians on the Internet. When all of this will come about is somewhat uncertain. It was made public in a health release on February 22, 2002. As more information becomes available we will try to maintain updates.

The White House Commission on complementary and alternative medicine is recommending to President Bush to consider more Medicare coverage of alternative remedies, increase research of alternative therapies, and to form a national office to coordinate the research and access to therapies that work.

The White House Commission is also recommending that Congress should require dietary supplement makers to register with the FDA to ensure that consumers learn about side effects.

It would be up to Health and Human Services Secretary, Tommy Thompson, to decide which if any of the recommendations the administration should follow.

The report shows a wide range of advice for more regulation for certain alternative therapies to campaigns designed to promote others.

The herbal sedative Kava is used to relieve anxiety, stress, and insomnia and is being studied as the cause of many cases of medical problems. This is true not only in the



United States, but also in Europe where health officials have reported twenty-five cases of liver toxicity.

It is not known whether Kava has a direct or perhaps indirect effect on the liver. Patients would be advised if they have any known liver problems to avoid taking Kava. This should also be done if a person regularly consumes alcohol or takes any drugs which effect liver function.

The National Center for Complementary and Alternative Medicine (NCCAM) announced the launch of its newly redesigned web site, which features easier navigation and access to information and new content and new links.

The web site can be reached at <http://www.nccam.nih.gov>.

Anthroposophical Medicine

This approach to therapy is intended to be a blend of traditional medicine with a range of alternative medical treatments including homeopathic remedies, nutrition, and massage therapy. As a model it takes into consideration the patient's body mind and spirit. It very much takes into consideration a person's emotional make up and their reaction to the particular illness.

Many family physicians and internists are paying much more attention and trying to blend non-traditional healing methods with traditional medicine.

Anthroposophical medicine is in no way intended to be a substitute for more conventional treatment of disease, but it exists along side traditional medical practice focusing on treating the whole person not just the disease.

Not only are physicians using complementary and alternative medicine treatments in their offices, but some clinics are being developed which will be devoted to complementary and alternative medicine and even included in patient care.

Doctors Need to Know More

Archives of Internal Medicine, a very respected medical journal, has found that 80% of physicians say they need to know more about alternative medicine in order to be able to discuss alternative medicines intelligently with their patients. In many cases the patient is probably more knowledgeable about certain complementary and alternative medicines than the physician.

Seventy-five percent of seven hundred doctors surveyed at least occasionally recommended complementary and alternative medicines to their patients.

Physicians usually do not ask patients about their use of alternative treatments and medications because they feel uncomfortable discussing the risks and benefits of such treatments because they are not well informed.

The National Center for Complementary and Alternative Medicine (NCCAM) is one of the twenty-seven institutes and centers comprising the National Institutes of Health (NIH).



The web site address for the NCCAM is <http://www.nccam.nih.gov>.

Children and Alternative Medicine

In an effort to study the use of alternative medicine by children the University of Arizona conducted a nationwide survey of one thousand five hundred parents and other primary care givers of children and adolescents.

It was very surprising that nearly twenty-two percent of the parents and primary care givers used some type of alternative medicine for their child and almost one in ten allowed the child to visit a complementary and alternative medicine provider such as a chiropractor or homeopath.

In a related part of the study it was noted that only two-thirds of the parents routinely informed the child's primary physician about CAM use.

Common alternative medicines used by children and administered by their parents and primary care givers included vitamins other than multi-vitamins normally used for children, herbal remedies and various chiropractic therapies.

CAM use was twice as common among children with chronic illnesses than among their healthy peers.

Dietary Supplement Regulation; All You Need To Know

The Dietary Supplements Health and Education Act was passed by Congress in 1994.

Under this Act a dietary supplement is a product other than tobacco that is intended to supplement the diet, which contains one or more of the following dietary ingredients.

1. Vitamin or Mineral
2. Herb or other Botanical
3. Amino Acid
4. A dietary substance to supplement the diet by increasing the total daily intake
5. A concentrate metab, metabolite, constituent, extract, or combination of these ingredients

It is ingested in a pill, capsule, tablet or liquid form.

It is labeled as a dietary supplement.

The burden of proof of ingredient safety is imposed on the manufacturers of dietary supplements.

Manufacturers of dietary supplements do not have to tell the FDA or consumers what evidence they have about their product safety or what evidence they have to back up the claims they are making for it.

Dietary supplements are under the umbrella of foods and FDA's Center for Food Safety and Applied Nutrition is responsible for the agency over sight of these products.



Drug-Herb Interactions Are Not Being Studied

In a recent survey of the 14 top herbal supplement makers and the top 30 pharmaceutical companies both were questioned regarding whether drug herb interactions were considered important and whether studies of those interactions were being conducted.

Only 15 companies in both groups bothered to reply to the questionnaire fully.

Of the companies that responded two thirds considered drug herb interactions important, but only three manufactures said that they had conducted studies and only two had allocated any funds to study such research.

It appears there is a great lack of interest in herb drug interactions within the pharmaceutical and herbal industries.

I believe this to be discouraging and alarming.

Addendum

Due to the popularity of complimentary and alternative medicine, we felt it would be important for On-Line Orthopaedics website readers to become more familiar with complimentary and alternative medicine providers other than physicians.

EPHEDRA

The American Academy of Orthopaedic Surgeons supports the removal of dietary supplements containing Ephedra alkaloids from the US market place.

A study published in the Annals of Internal Medicine indicated that products containing Ephedra account for 64% of all adverse reactions to herbs in the United States, but products containing Ephedra represent only .8% of herbal product sales.

ACUPUNCTURIST

Acupuncture originated in ancient China and is a method of pain control that utilizes the stimulation of acupoints by various methods. It is based on the theory that an essential life energy called qi flows through the body along invisible meridians. Stimulation of points along these meridians corrects the flow of qi to optimize health or block pain.

Acupuncturists can be certified by one of two methods. Educational training can include formal full time educational programs or apprenticeship programs.

They must also have completed a clean needle technique approved course. Medical doctors can complete 220 hours of training in acupuncture to be considered for board certification.

Certification for a formally trained acupuncturist is through the National Certification Commission for Acupuncture and Oriental Medicine.

40 states regulate the profession of acupuncture. Organizations representing the



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profession are the American Association of Oriental Medicine (www.aaom.org) and the American Academy of Medical Acupuncture (www.medicalacupuncture.org).

AYURVEDIC PRACTITIONER

Ayurveda is a form of health care developed in ancient India that focuses on wellness and healthy living through diet, exercise moderation and meditation. The practitioner is an advisor who suggests life style and health practices to restore or optimize mental, physical and spiritual well-being. There are few practitioners in the United States. There is no U.S. national standard for certifying ayurvedic practitioners.

CHIROPRACTOR

Chiropractic is based on the theory that misalignment of vertebra is the cause of most neuromuscular and related functional diseases and disorders. It was developed in the United States in 1885. Chiropractors complete a four year program at one of seventeen accredited chiropractic colleges. Although mainly focused on musculoskeletal issues, they are also trained in general diagnostics and health promotion, utilizing nutrition, exercise and lifestyle modification in their practices. Certification is through the National Board of Chiropractic Examiners and board exams are taken in parts.

Chiropractors are licensed in all 50 states and many foreign countries. The initials D.C., Doctor of Chiropractic, will identify a licensed chiropractor. Chiropractors are neither licensed to perform surgery nor prescribe drugs. They are not physicians and they are not orthopaedists. Their national professional organization is the American Chiropractic Associations (www.amerchiro.org).

CHINESE HERBALIST

The practice of Chinese medicine involves restoring the balance to the body by various means. Combinations of herbs are prepared as pills, potions and linaments that are prescribed by herbalists in an attempt to restore balance. Chinese herbalists may go through formal schooling of an accredited Oriental Medicine education program including 2175 contact hours. An apprenticeship program can also be completed.

Certification is through the National Certification Commission on Acupuncture and Oriental Medicine (see above).

HOMEOPATHS

Homeopathy was developed in the 18th century in Germany and is based on the theory that like cures like. Minuscule amounts of natural substances such as herbs, minerals and animal products are used to induce the body of a sick person to heal an illness through administration in a serially diluted preparation.

Arizona, Connecticut and Nevada license homeopaths, and they require a D.O. or M.D. degree as well as certification in the study of homeopathy. A board examination is offered by the National board of Homeopathic Examiners, but is not required for licensing.

The National Organization for Homeopaths is the North American Society for Homeopathy (www.homeopathy.org).



MASSAGE THERAPIST

Massage is one of the most used complimentary therapies in the United States. In order to become certified, a massage therapist must complete a minimum of 500 hours of supervised education in a formal therapeutic massage body work program. They may also be considered for certification after 100 hours of training in Anatomy, Physiology, Kinesiology, 200 hours of formal education in body work and/or massage and 200 hours of related education or professional experience. Board certification is through the National Certification for Therapeutic Massage and Body Work (www.ncbtmb.com) and is required for licensing in 20 of the 29 states that regulate massage therapists.

NATUROPATHS

Naturopathy began in European spas in the 19th century. The underlying principles of Naturopathy revolve around encouraging healthy living habits and allowing the body to heal itself. Naturopathic physicians are noted for their expertise in nutrition. They frequently work with a physician or other health care provider. They can treat wounds and are trained in minor surgery.

Naturopathic physicians undergo a four year training program that includes non toxic therapy such as homeopathy, common clinical nutrition, manipulation, herbal medicine and hydrotherapy. They may have additional training in Chinese medicine such as acupuncture and herbs. Naturopaths are licensed in twelve U.S. states and their certification exam is administered by the National Board of Naturopathic Examiners (www.nabne.org). Their professional organization is the American Association of Naturopathic Physicians (www.naturopathic.org).

Conclusion

We have tried to provide Online Orthopaedic website readers with an overview of Complimentary and Alternative Medicine (CAM) Providers. As you can see, professional licensing and regulation of CAM providers varies greatly across the country, and they are the choice of each state.



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Please consult Dr. Haverbush or a physician for specific treatment recommendations.

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