

# **Complementary and Alternative Medicine in the United States**

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## Introduction

While relatively new in the U.S., complementary and alternative medicine (CAM) is a fully accepted and integrated form of health care in many areas of the world and has existed since antiquity. For Americans, CAM is one of the fastest growing fields in healthcare and is more widely used today than ever before. Millions of Americans are spending billions of out-of-pocket dollars on CAM therapies. Its widespread use has had impact on users, practitioners, researchers and policy makers. CAM's growing influence has been described as a "hidden mainstream in American medicine."<sup>1</sup> This surge has resulted in the need to better understand the market, from a personal and public health perspective.

The recent increase in the interest and growth of complementary and alternative medicine can be attributed to many reasons including technological, economic, cultural and social trends. Its growth is also fueled by the rising dissatisfaction with the traditional health care & delivery of medicine in the United States. Additionally, self-empowerment, personal savings accounts and the internet are enabling greater access to alternative medicine.<sup>2</sup>

Some attribute the growth in CAM to the view that the combination of CAM with conventional medicine is better than conventional medicine alone. Additionally CAM treatments fill gaps, such as the treatment of chronic pain and other debilitating conditions, in areas where conventional medical practices are not always successful. CAM is also being used with certain medical conditions that are without a cure or with conditions that have a cure but have significant side effects such as cancer.

Other Americans are turning to CAM because they feel the current healthcare system is failing them for many reasons. These include access to health insurance, cost prohibitive prescriptions, impersonal & dismissive physicians, a heavy reliance on drugs, misdiagnosis, and conflicting views regarding the maintenance of wellness.<sup>3</sup>

A more empowered approach to healthcare is another reason for growing enthusiasm for alternative treatment approaches. CAM users are choosing alternative treatments because they are more personal, less invasive and often have lower costs. There is a growing movement away from disease management to a more holistic approach to healthcare that includes a shift from the emphasis on technology for healing to a focus on the natural healing ability of the body. CAM philosophies align with users' personal value systems..

Very importantly, interest in CAM research continues to grow as more and more studies are funded to establish the evidence base required for CAM integration and acceptance into routine physical care. Despite its fast growth, there are still low levels of understanding regarding the complementary and alternative medicine market. The purpose of this chapter is to provide a better understanding of the definition of CAM, its origins and background, market trends, users of CAM, and research.

## What is Complementary and Alternative Medicine (CAM)?

*“There is no such thing as alternative medicine. There is medicine that works and medicine that does not work.”*<sup>4</sup>  
Arnold Relman, MD

The Cochrane Complementary Medicine Field describes CAM as “practices and ideas that are defined by their users as preventing or treating illness, or promoting health and well being...and which are outside the domain of conventional medicine in several countries.”<sup>5</sup> Another definition, use by the National Center for Complementary and Alternative Medicine (NCCAM) defines CAM as “a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine. Conventional medicine is medicine as practiced by holders of M.D. (medical doctor) or D.O. (doctor of osteopathy) degrees and by their allied health professionals, such as physical therapists, psychologists, and registered nurses...”<sup>6</sup>

CAM is often used as an umbrella term to describe a wide range of both common and more obscure modalities including therapies that can users can administer alone (ex: meditation, herbs) to therapies that require a practitioner (ex: acupuncture, massage, reflexology, homeopathy). A major challenge in studying the field of complementary and alternative medicine is the lack of consensus regarding its definition. There is not a universal, agreed upon definition as to what CAM is and many inconsistencies exist within the market.

There are many terms used to describe alternative approaches to health care; other terms used to describe CAM include holistic medicine, alternative medicine, and integrative medicine. Complementary medicine is defined as alternative approaches used in combination with conventional medicine, while alternative medicine is used in place of conventional medicine.<sup>7</sup> Integrative medicine is viewed as the evolution of CAM. It promotes a new philosophy in terms of the relationship between the patient and the physician as well as utilizing evidence-based CAM therapies in combination with conventional medicine. Integrative medicine is further discussed later in the chapter.

The emphasis with most CAM therapies is on the natural healing ability of the body versus the emphasis on technology for healing in conventional medicine. Some other commonalities with most CAM therapies include<sup>8</sup>:

- The focus is treating the whole person.
- Prevention is a primary concern.
- Treatments are highly individualized.
- Treatments are aimed at the causes of illness rather than at the symptoms.
- Treatments are designed to support the natural healing processes of the body.

## What is Complementary and Alternative Medicine (CAM)? (cont.)

In an effort to create some structure around CAM, NCCAM has created a classification system to encompass the multitude of CAM therapies. The categories are:

### Whole medical systems

Whole medical systems are based on a complete system of theory and practice that has originated separately and often earlier than the development of conventional western medical practices. They are not a single practice or a remedy, but based on a whole philosophy or lifestyle. Some of these were developed in Western cultures such as homeopathy and naturopathy, while others come from the non-western ancient cultures. These include:

- Homeopathy. A system that used highly diluted doses of a substance that causes symptoms to enable the body's self-healing response.
- Naturopathy. A philosophy that utilizes non-invasive treatments to help the body heal itself. Practices utilized include massage, herbal remedies, exercise and lifestyle counseling.
- Ayurvedic medicine. A medical system from India that originated in the 5<sup>th</sup> century A.D... It focuses on a customized treatment based on the individual using practices such as yoga, meditation, massage, diet and herbs.
- Ancient medicines. These included Chinese, Asian, Pacific Islander, American Indian and Tibetan practices. Chinese medicine, for example, includes treatments such as acupuncture, qigong, herbal medicine, exercise and breathing techniques.

### Mind-body interventions

Mind-body medicine works to use the mind to affect the body and its physical symptoms. The premise is that the mind and body must be in harmony to stay healthy. Examples include psychotherapy, guided imagery, meditation, prayer & mental healing, hypnosis, dance, music and art therapy. Some mind-body practices systems that were once considered CAM are now mainstream including support groups and cognitive-behavioral therapy.<sup>9</sup>

### Biologically based treatments

These treatments utilize natural but unproven products such as herbs, minerals and hormones to promote health. Examples include specialized diets (ex: macrobiotics), dietary supplements and herbal therapies. These products are trusted by many because they are natural and they have been used for thousands of years. However, many of these treatments are scientifically unproven, and can be harmful, particularly from interactions with other medications.<sup>10</sup>

### Manipulative and body-based methods

These practices are based on manipulation: "the application of controlled force to a joint, moving it beyond the normal range of motion in an effort to aid in restoring health."<sup>11</sup> Examples include chiropractic care, osteopathic manipulation, massage therapy, pressure point therapies, rolfing, polarity therapy and craniosacral therapy.<sup>12</sup>

## What is Complementary and Alternative Medicine (CAM)? (cont.)

### Energy therapies

Energy medicine practitioners believe an invisible energy force flows through the body. When this force becomes blocked or unbalanced, it manifests physical illness. This force has been referred to as chi, prana and the life force. The goal of these therapies is to correct this blockage. The field is divided into two areas, biofield and bioelectromagnetic based therapy. Biofield therapies, work to “affect the energy fields that purportedly surround and penetrate the human body through applying pressure or manipulating the body by placing the hands in or through these fields.”<sup>13</sup> Examples include qigong, reiki and therapeutic touch therapy. Bioelectromagnetic therapies utilize magnetic, pulsed or direct current fields for healing.<sup>14</sup>

### The Most Popular CAM Therapies

The 2002 edition of the NCHS's National Health Interview Survey (NHIS) is an annual study regarding health that included questions about CAM for 2002. Within this study, the most common CAM therapies (excluding prayer) were natural products, deep breathing, meditation, chiropractic, yoga, massage and diet. The most commonly used remedies within the natural products category were Echinacea, ginseng, ginkgo, glucosamine and St. John's Wort.<sup>15</sup>

One study done by Harvard researchers reports a trend in the adoption of certain types of therapies over the decades, influenced by culture. During the 1960's commercial and diet therapies, self-help group and megavitamin therapy were prominent. In the 1970's, biofeedback, energy healing, herbal medicine and imagery were high in demand. In the 1980's massage and naturopathy were dominant while the 1990's reflected increases in yoga, massage, energy healing, and aromatherapy.<sup>16</sup>

### Key Milestones in the Progression of CAM

In 1992 Congress developed the Office of Unconventional Medicine (later changed to the Office of Alternative Medicine, OAM) with a minimal budget of two million dollars to develop baseline information regarding CAM usage in the United States. By 1998, the use and role of CAM was a dominant and controversial issue within the medical community. Some groups such as the American Medical Association supported the exploration of CAM by publishing many articles on the topic; others like the New England Journal of Medicine highlighted the lack of scientific proven, evidence based studies on CAM.<sup>17</sup>

The momentum for CAM continued in 1998 when the OAM was renamed to the National Center for Complementary and Alternative Medicine (NCCAM) and was elevated as the federal governments lead agency for scientific research in this area. NCCAM became one of the National Institutes of Health (NIH) Centers within the U.S. Department of Health and Human Services. The NCCAM budget in 1998 was raised to 48.9 million. For 2008, congressional appropriations for NCCAM were \$121 million dollars, the single largest source for CAM research.<sup>18</sup> Additionally, over one hundred million dollars are also spent on CAM in other NIH institutes.

## Key Milestones in the Progression of CAM (cont.)

The NCCAM mission is to:

- Explore complementary and alternative healing practices in the context of rigorous science.
- Train complementary and alternative medicine researchers.
- Disseminate authoritative information to the public and professionals.<sup>19</sup>

Established in 1998, The Office of Cancer Complementary and Alternative Medicine (OCCAM), within the National Cancer Institute, works to develop and coordinate CAM activities related to cancer. OCCAM focuses its efforts in three areas: research development and support, assessment and communications.

In 2000 President Clinton created the White House Commission on Complementary and Alternative Medicine Policy. The purpose of the commission was to research the growing field and provide recommendations on policy and legislative issues. Also in 2000, the Federation of State Medical Boards established guidelines regarding the standards and use of CAM within professional practices.<sup>20</sup>

The Consortium of Academic Health Centers for Integrative Medicine was launched in 2000. Today the consortium has 39 highly regarded academic medical schools as members, including Stanford, Yale, Harvard and John Hopkins universities. The mission of the consortium is “to help transform medicine and healthcare through rigorous scientific studies, new models of clinical care, and innovative educational programs that integrate biomedicine, the complexity of human beings, the intrinsic nature of healing and the rich diversity of therapeutic systems.”<sup>21</sup> Membership requires that the medical school must have a strong program in two of the following three areas of CAM: research, education or clinical delivery.

### Understanding the Opportunity: Size and Scope of the CAM Market (updated data)

The most recent data regarding market size and scope for CAM therapies indicate that complementary and alternative medicine usage has remained consistent overall and increased in certain areas. Studies show that anywhere from one third to almost half of all Americans use at least one type of CAM therapy. In 2005, the medical journal *Alternative Therapies in Health and Medicine* published results from the first direct CAM usage comparison study using a common definition of CAM. The results show that one in three U.S. adults (35%) used at least some form of CAM in 2002. This has remained steady since 1997, showing a five year trend of continued widespread use.<sup>22</sup> Another study in 2004 reported that this number was as high as 48% (excluding personal prayer).<sup>23</sup>

This is evidenced as increasing numbers of CAM therapies become visible in daily life including the yoga & meditation at the YMCA, elderly consumers (often late adopters) participating in Qigong, the large selection of herbal remedies & other natural foods in grocery stores and the tremendous success of CAM authors such as Andrew Weil. Other key market data is listed below:

### Understanding the Opportunity: Size and Scope of the CAM Market (cont.)

- Americans spend more than \$27 billion annually on complementary and alternative medicine, most of which are out-of-pocket expenses.<sup>24</sup> This is similar to the out-of-pocket estimate for expenditures on all U.S. physicians.
- The total number of Americans using any type of CAM therapy was 72 million in 2002<sup>25</sup> Also in 2002 Newsweek, reported that 83 million Americans, over 40% of the adult population, sought out herbalists, chiropractors and other CAM practitioners.<sup>26</sup>
- Total visits to CAM providers exceeded total visits (629 million) to all primary care physicians in 1997.<sup>27</sup>
- The out-of-pocket estimate for CAM expenditures on professional services in 1997 is 12.2 billion. This was higher than out-of-pocket expenditures for all U.S. hospitalizations.<sup>28</sup>
- More than 90 of 125 allopathic medical schools reported CAM as part of the required or elective conventional medical courses.<sup>29</sup>
- Most hospitals now offer some form of CAM treatment. A study in the Archives of Internal medicine reported in 1998 reported that 43% of U.S. physicians refer patients to CAM providers.
- More and more health insurance plans are covering CAM, particularly in acupuncture and chiropractic treatments, where efficacy is now well documented. American Specialty Health, a company that puts together CAM services for group health insurance plans, has experienced substantial growth, fueled by interest from more traditional organizations such as General Motors.<sup>30</sup>

These trends indicate that both the American public and those within the field of healthcare are carefully moving in the direction of an integrative medicine system that incorporates proven CAM therapies into conventional medical care.

### Demographic Profile of CAM Users (Who Uses CAM and Why?)

CAM is used widely across all socio-demographic groups and cuts across the U.S. population including groups as diverse as soccer moms, truckers, students, minorities, conservatives and retirees. While there are some trends among CAM users, the absence of a consistently applied CAM definition requires some caution creating CAM profiles. While CAM users are not confined to any one particular group, CAM users, compared to non-users, are more likely to be prevalent among Americans who are:<sup>31</sup>

- white
- women
- age 35 to 55
- from western states
- have a higher socioeconomic position

## Demographic Profile of CAM Users (Who Uses CAM and Why?) (cont.)

Higher CAM usage rates for females (49%) compared to males (38%) are not surprising as females tend to be more health conscious and more likely to participate in preventative care. Additionally, women are often the head of healthcare for their families, which may result in increased family CAM usage as well.<sup>32</sup>

The majority of CAM users tend to be age 35 or older, but usage is reported across all age groups. As reported by Eisenberg, 10% were between 18-24 years, 22% between 25-34, 33% between 35-49 and 35% were 50 years or older. A recent study by Ronald Kessler, Harvard medical school professor, does show a trend towards increasing use among younger respondents. By age 33, 70% of post-baby boomers had used a CAM therapy, compared to 50% of baby boomers and 30% of pre-baby boomers.<sup>33</sup>

Most research studies also report a positive association between CAM use and income as well as CAM use and education. The 1998 Eisenberg study shows CAM use was more common among those with annual incomes above \$50,000, but when viewed within income quartiles, usage was still prevalent among lower incomes as well.<sup>34</sup>

Income	% CAM Usage within quartile
<\$20,000	43%
\$20,000 - \$30,000	37%
\$30,000- \$50,000	44%
>\$50,000	48%

Level of education was also positively associated with CAM use. The Eisenberg study reported a 49% usage rate for those with a college degree or higher compared to 37% for high school graduates and 14% for those with without a high school education. Additionally a 2004 study found that the rate of use increased as the level of education increased.<sup>35</sup>

The use of CAM is prevalent across most ethnicities including white, African-American, Latino, Asian and Native American populations. A 2002 study indicated overall CAM use was highest for white, non-Hispanics (31%) followed by black, non-Hispanics (24%) and by Hispanics (20%).<sup>36</sup> These aggregates however change significantly based on the type of CAM therapy. For example, African American adults were most likely to use mind-body therapies while white adults were most likely to use manipulative and body based therapies.<sup>37</sup> Additionally, most studies underestimate CAM usage by race as many remedies are so entrenched within a culture, such as herbs, they are not reported.

### Demographic Profile of CAM Users (Who Uses CAM and Why?) (cont.)

While trends seem to indicate CAM users are primarily younger to middle aged, better educated and in higher income brackets, this should be viewed with caution as fewer studies on the topic of CAM use by low-income groups have been conducted. Further research needs to be done with respect to minorities as well. Additionally, usage based on income, education and ethnicity also varies based on the specific CAM modality. The use of therapies based on self-care, such as Reiki, tends to have higher educational levels while other therapies such as herbal medicine and healing techniques, have higher usage rates among certain ethnic groups. Also, while socioeconomic position tends to influence the likelihood of CAM usage regardless of gender, it is not as strong an influencer with race/ethnicity. When looked at by modality, the use of alternative treatments seems to apply across most demographics: gender, ethnicity, education and income.

### How Are Americans Using CAM?

Most Americans are using CAM therapies in combination with conventional medicine, not as a replacement for it. Many CAM patients find value in making CAM a part of their health care regimen. It is viewed as a complement to other health services they are utilizing. The 1997 Eisenberg study reported that 96% of respondents who saw a practitioner of alternative therapy for a principal condition also saw a medical doctor during the prior twelve months. Additionally, 79% of respondents who saw a medical doctor and used CAM therapies thought this was superior to either treatment singularly. Unfortunately, the use of these alternative therapies is usually not discussed by the patient with their medical doctor, which has implications regarding safety of interactions and coordination of care.<sup>38</sup>

While anywhere from one-third to one-half of the population is using a CAM therapy, much of this use is self-treated, without the supervision of an alternative practitioner. In 1997, 46% of CAM therapy users saw a CAM practitioner.<sup>39</sup> The five therapies where the majority used a practitioner included massage, chiropractic, hypnosis, biofeedback and acupuncture.

Insurance coverage for CAM by most groups is limited, with the exception of chiropractic services (covered by most); however companies are slowly starting to add limited coverage. Adoption of CAM coverage by insurance providers varies considerably by firm with each one having different levels and types of coverage for CAM treatments. Among insurance companies who do have CAM coverage, most do so as an added benefit with services provided at an added cost. In addition to chiropractic care, acupuncture and massage therapy were the other two services most likely to be covered.

## What motivates people to use CAM?

CAM users are aware that often there is little evidence to support the efficacy of the treatments and that CAM practitioners receive less formal training than conventional physicians. Still many Americans have enthusiastically adopted CAM therapies often without the support of scientific evidence. Consumers are learning about CAM from informal resources: bits and pieces gleaned from the internet, endorsements from friends & family, and positive personal experiences.

Despite the absence of evidence-based data, why are CAM consumers still actively seeking out CAM practitioners? Overall, there is wide range of motivations for CAM, so generalizations should be avoided; however, some of the most common motivations for CAM use are discussed.

Recent data from a 2004 NHIS study lists the following reasons for CAM use<sup>40</sup>:

- Believed CAM medicine combined with conventional medicine would help (55%)
- CAM would be interesting to try (51%)
- CAM suggested by a conventional medical practitioner (26%)
- Conventional medical treatments would not help (28%)
- Conventional medical therapies were too expensive (13%)

One major motivation for use is health promotion and disease prevention. A predominant CAM motivator is to maintain long-term health and wellness. 58% of respondents in the Eisenberg study reported using alternative therapies to “prevent future illness from occurring or to maintain health and vitality compared to 42% who used it to treat an existing disease.”<sup>41</sup> Interestingly, 50% of those respondents who had tried an alternative therapy were still using it 11 to 20 years later, illustrating the fact that CAM therapies are often used as long-term preventative measures.<sup>42</sup>

Motivations for CAM also relate to philosophical beliefs as well as desire for self-control and empowerment. Partially in response to the problems associated with traditional health-care, Americans are taking responsibility for their health through informed decision-making and are no longer relying solely on the opinions of their primary health care provider. Many are empowered with their ability to pay out-of-pocket and the increased options they have. They are embracing CAM because it enables “each individual to construct one’s own approach to health and healing and to interpret the meaning of health and healing for oneself.”<sup>43</sup> CAM also aligns many users’ belief systems. There is a growing interest in holistic health philosophies. CAM fits well with this shift towards treating the whole person.

## What motivates people to use CAM? (cont.)

Another motivation is dissatisfaction with the current healthcare system. A cultural transformation is taking place in healthcare based on Americans' disenchantment with the status quo. CAM represents an alternative to conventional health beliefs. Specific motivations related to negative experiences with the conventional medicine include frustration with conventional therapies, desire for new approaches to illness, rising costs of treatment and a closer patient-provider relationship. However, studies show mixed results regarding this motivation. Some studies indicate reasons for CAM do not necessarily stem from displeasure with traditional provider, but from unmet needs.<sup>44</sup>

As illustrated, motivations for CAM use are numerous and can be complex. Furthermore motivations change over time, depending on the where in the process a user may be. As an example, motivations for initiating CAM use can be quite different from reasons for sustaining usage. All these factors must be taken into consideration when understanding CAM selection.

Among Americans who visited CAM practitioners, most did so for health maintenance or for chronic conditions. The most common conditions CAM is used to treat include back pain, allergies, arthritis, insomnia, sprains, headaches, high blood pressure, digestive problems, menopause, anxiety and depression.<sup>45</sup>

Those with the serious medical issues are the less likely to rely solely on CAM for treatment, unless the illness was terminal. Among cancer patients, 63-75% use at least one CAM therapy in conjunction with allopathic treatments, these include spiritual & relaxation approaches, nutritional therapy, massage and herbal medicine. HIV positive patients most often utilize herbal remedies, massage therapy, acupuncture and nutritional therapy. CAM therapies are chosen more often than conventional treatments by those with chronic conditions such as headaches, chronic pain, depression, anxiety and insomnia.<sup>46</sup>

### The Shift - Integrative Medicine

Integrative medicine is often viewed as the evolution of complementary and alternative medicine. While the two terms blur in definition, leaders in the field draw a clear distinction between them, emphasizing they are not the same. Integrative medicine as defined by NCCAM “combines mainstream medical therapies and CAM therapies for which there is some high quality scientific evidence of safety and effectiveness.”<sup>47</sup> The emphasis on high quality scientific evidence is a clear distinction between the two. CAM therapies are often outside the realm of conventional medicine and are not supported by evidence-based research. Integrative medicine also distinguishes itself from CAM by being patient-focused versus modality-focused. A more comprehensive definition by the Institute of Medicine describes Integrative medicine as “healing-oriented medicine that reemphasizes the relationship between the patient and physician and integrates the best of complementary and alternative medicine with the best of conventional medicine.”<sup>48</sup>

## The Shift - Integrative Medicine (cont.)

CAM is also starting to appear in conventional medical education. More than two-thirds of mainstream medical schools offer elective or required courses on CAM topics. Additionally a growing number of physicians are incorporating CAM into their practices. The most common CAM treatments discussed with patients are acupuncture, chiropractic services, homeopathy, herbals and massage.

## Research – Evidence- Based Therapies: What Works?

While there is an abundance of initial information worth further study and a solid a foundation of scientific-proven evidence for CAM treatments, large gaps in CAM evidence still exist. There is still a great need for more high-quality research to understand benefits and risks with CAM modalities. This is extremely relevant for those treatments already in widespread use. Fortunately groups such as NCCAM and other institutions are now creating these studies and the future should provide more answers. There is general consensus to the opinion that the same rigorous standards of research that apply to conventional medicine must also apply to CAM. This will help separate the proven from the unproven and enable consumers to make intelligent and informed decisions.

Within the field of conventional medicine as well as CAM, randomized controlled trials (RCT) are the preferred study method for proving efficacy. Many feel RCT's are an absolute requirement for adoption and acceptance into more mainstream channels. Thousands of studies have been completed regarding CAM efficacy and an even greater number have been started or are ongoing. As more and more studies, clinical trials, cohort studies, population studies, and animal studies are performed it is difficult to keep track of them all and determine study quality.<sup>49</sup> Many of these research studies are flawed due to the challenges of designing a well-designed trial. Small trials, inconsistencies in methodological design, lack of a control group and other issues have affected how meaningful the results are.

Systematic reviews and meta-analysis studies are commonly utilized to help summarize and draw conclusions about a topic based on existing studies. Systematic reviews make independent conclusions based on a review of existing studies. Meta-analysis studies utilize statistical methods to combine data from existing studies to provide new information. As more evidence becomes available to validate certain CAM treatments, there is a shift from the question “does it work?” to “why does it work?” Many attribute this to the therapeutic nature of CAM.

The two main sources for CAM information about published RCT's and systematic reviews for treatments are the Cochrane Library and MEDLINE.

## Research – Evidence- Based Therapies: What Works? (cont.)

MEDLINE/PubMed is a service from the National Library of Medicine, a part of the National Institutes of Health. It is an extensive database covering most areas of clinical medicine and biomedical research. It covers over 750 health topics from over 1350 organizations with more than 18,000 links to health information.<sup>50</sup> It is accessible online and free of charge to the public. MEDLINE/PubMed has different websites. The first is PubMed which has biomedical journals and literature from the library. The next is Medline Plus which is health and drug information targeted to patients, family and friends. Finally Clinical Trials.gov has information about the status of federally and privately sponsored clinical trials, which recently yielded over five hundred CAM related trials. The subject subset CAM was added to the site in 2001 and includes all records in the database related to CAM. The number of systematic reviews and RCT's related to CAM has grown dramatically over the past decade.

The Cochrane Library is part of the Cochrane Collaboration and is one of the most highly regarded sources for information on reliable evidence for health treatments including CAM practices. The Collaboration is an international organization of more than 9000 members (mostly volunteers) throughout the world. Cochrane reviews are created by members as summaries or systematic reviews of most kinds of health interventions and are known for their methodological rigor.<sup>51</sup> A Cochrane review is an extensive research paper which studies the scientific evidence in support of the use of specific CAM therapies. Many controlled trials included in the library are not accessible in other places. Access to the library requires membership.

The Cochrane Complementary Medicine Field at the University of Maryland Center for Integrative Medicine handles all CAM activities for the group including preparation of CAM reviews and management of the database with over 7,000 controlled trials of CAM therapies. The reviews “explore the evidence for and against the effectiveness and appropriateness of treatments (medications, surgery, education, etc) in specific circumstances.”<sup>52</sup> Reviews are available through the library quarterly as well as on the Internet and CD-ROM. At present there are over 180 reviews, clinical trials or studies on complimentary and alternative medicine.

Utilizing the Cochrane library, a study was done using manual and electronic searches of reviews to determine among other things, which CAM therapies have the strongest evidence for effectiveness.<sup>53</sup> This was done by classifying the reviews by therapy type and then a rating was given to each review by two researchers trained in RCT's and systematic review methodology. There were six possible ratings: positive effect, possibly positive effect, two active treatments are equal, insufficient/inconclusive evidence, no effect or harmful effect. The therapies that had largest number of reviews in the library were dietary supplements, non-herbal (71), herbal supplements (23), electrical stimulation (11) and acupuncture (10).<sup>54</sup> Some of the other CAM therapies that had more than two reviews in the library included homeopathy, laser therapy and massage.

## Research – Evidence- Based Therapies: What Works? (cont.)

The results showed the largest number of reviews in this study was given the rating of insufficient evidence (56.6%). This was followed by the almost one quarter of the reviews with a positive effect (24.8%), possibly positive effect (12.4%), and no effect (4.8%). One review fell into the each of the bottom two ratings, harmful effect and equal effect. Those therapies with the highest number of positive or possibly positive ratings were herbal therapies (16) and electrical stimulation (5). Three of ten acupuncture reviews had positive or possibly positive ratings.<sup>55</sup>

There were very few or no reviews for certain therapies that are widely used by the public including meditation, yoga and chiropractic manipulation.<sup>56</sup> Although the study revealed solid evidence for herbal therapies and electrical stimulation, the large number of reviews with insufficient evidence illustrate the need for more research in the field overall.

Another source for understanding CAM's effectiveness is the U.S agency for Health Care Research and Quality (AHRQ), the leading federal agency concerned with healthcare research using evidence reports. Many of these reports relate to CAM and can be found on their website. An example of some CAM reports published in 2003 include:

- Acupuncture for fibromyalgia
- Antioxidants supplements, prevention and treatment of cancer & cardiovascular disease
- Ayurvedic interventions for diabetes mellitus: a systematic review

### Specific Studies

While a discussion of the extensive amount of scientific evidence for CAM therapies is outside the scope of this paper, a brief discussion regarding key therapies and scientific evidence in support of these treatments is discussed below.

Five universities from the Consortium of Academic Health Centers for Integrative Medicine list five CAM practices that are promising and have significant scientific research behind them:<sup>57</sup>

- Acupuncture for pain
- Calcium, magnesium and vitamin B6 for PMS
- St. John's Work for mild to moderate depression
- Guided imagery for pain and anxiety
- Glucosamine for joint pain

### Specific Studies (cont.)

Authors Ronald Hoffman, M.D. and Barry Fox, Ph.D did an extensive study of CAM therapies and efficacy. A selection of those studies that were identified as having strong evidence of efficacy is discussed below. These treatments are supported by “a significant body of good quality clinical evidence (randomized controlled clinical trials involving several hundred people with endpoints of clinical relevance), and/or a recommendation from Germany’s Commission E.<sup>58</sup>” These CAM therapies included:

- Kava and Valerian for treatment of anxiety.
- Omega- 3 fatty acids, B vitamins and garlic for coronary heart disease.
- St. John’s Wort and SAMe for depression.
- Pycnogenol for Diabetes treatment.
- Acupuncture for Fibromyalgia, insomnia, osteoarthritis and PMS
- Calcium, coenzyme Q10 and garlic for high blood pressure
- Black cohosh for menstrual hot flashes
- Chondroitin sulfate and glucosamine for osteoarthritis
- Chasteberry to treat PMS symptoms
- Acupuncture and omega-3 fatty acids for rheumatoid arthritis

In addition to these studies mentioned above in support of acupuncture, the NIH lists acupuncture as a valid source for treating many conditions included acute dental pain, nausea from chemotherapy, headaches, joint dysfunction, fibromyalgia and depression.

### Mind-Body Practices

Evidence from controlled trials and systematic reviews showed that neurochemical and anatomical bases may exist for some of the effects of mind-body approaches. An NIH panel determined that meditation and guided imagery are effective in the management of pain and in the relief of stress and anxiety.

Additionally an array of mind-body therapies used before surgery (imagery, hypnosis, relaxation) has been shown to improve recovery time and reduce pain post surgery. There is also solid evidence that mind-body therapies can be useful tools in managing chronic conditions.<sup>59</sup> While promising, larger and more rigorous studies are still needed to make definitive conclusions.

### Ayurveda

Most clinical trials of Ayurveda have been small and lacked proper research design so there is little reliable scientific evidence in support of it. Evaluating the effectiveness of Ayurveda is difficult because it is hard to use standard trails with a treatment that is individualized by patient. However, NCCAM and partner institutions are supporting new research in this area. Two examples:<sup>60</sup>

- The Center for Phytomedicine Research at the University of Arizona is studying three botanicals (ginger, turmeric and boswellia) to determine their usefulness in treating arthritis and asthma.
- The Cleveland Clinic foundation is studying the botanical cowhage for its ability to reduce the side effects of the conventional drugs used in Parkinson’s disease.

## Research – Evidence- Based Therapies: What Works? (cont.)

### Homeopathy

Individualized, controlled clinical trials of homeopathy have produced mixed results. In some studies, homeopathy was proven to be more effective than a placebo while other studies show no difference between homeopathy and a placebo. In total, a look at the collection of trials through systematic reviews have not found homeopathy to be a proven treatment. Some current studies funded by NCCAM on homeopathy include:

- Homeopathy for physical, mental and emotional symptoms of Fibromyalgia
- Homeopathy for brain deterioration and damage in animal models for stroke and dementia
- The study of cadmium and its affect prostrate cells when exposed to toxins<sup>61</sup>

### Conclusion & Implications

The CAM movement started as a grass roots movement and has since garnered a lot of attention and power with consumers, the medical community and the government. With the shift to integrative medicine the momentum does not seem to be slowing and consumers are demanding both through their voices and wallets, that key stakeholders in the medical community pay attention.

The growth of CAM serves as evidence for new ways of thinking about what is optimal healthcare. CAM's success clearly highlights some opportunities for improvement within conventional medicine. They include the need to:

- Reset the patient-physician relationship with an emphasis on meaningful, two-way communication
- Consider new philosophies regarding definition of wellness and health maintenance.
- Continue use of the state of the art technology without losing sight of the human element.
- Accept some alternative therapies can provide benefits that conventional medicine cannot and incorporate them when appropriate.

## Conclusion & Implications (cont.)

The role of CAM within mainstream medicine is still undecided. While collaboration is occurring, there are still many scientific, educational and regulations issues that remain a challenge to integration. Evidenced based research will be the primary determinant of the level of integration. It is imperative to think about what is the ideal amount of integration? Is the goal full integration, complete separation or something in between? Further work is needed in the areas of:

- Determination of the appropriate role of CAM within the field of conventional medicine
- Further clarification of CAM in terms of modalities, research and consumer usage patterns to organize the field
- Aggressive evidence based research with collaboration between CAM and conventional practitioners.
- Reduction of barriers to integration
- Clear regulatory legislation to refine accepted versus unaccepted therapies
- Continued work to organize/evaluate the vast sea of available scientific research and reach consensus regarding the design of high-quality research design by modality moving forward.
- Widespread education about CAM for all key stakeholders.

Regardless of the fact that CAM is unregulated, widespread use of CAM is now common. While most CAM therapies are not dangerous, some can be. As supported by the government's significant investment in CAM, there is a responsibility to protect society from dangerous treatments. Beyond basic protection from danger, the goal should be to sort the proven from unproven to help Americans make sound decisions in their quest for wellness. Despite the considerable amount of work ahead, CAM ultimately has the potential to elevate and improve mainstream healthcare, both in conjunction with conventional medicine and separately.

## Additional Resources for Complementary and Alternative Medicine

Site: Alternative Medicine Foundation

Location: <http://www.amfoundation.org>

Site: The Alternative Medicine HomePage: Government Resources: Alternative Medicine Resources

Location: <http://www.pitt.edu/~cbw/gov.html>

Site: Alternative Therapies in Health and Medicine

Location: <http://www.alternative-therapies.com>

Site: American Academy of Medical Acupuncture

Location: <http://www.medicalacupuncture.org>

Site: American Association of Naturopathic Physicians

Location: <http://www.naturopathic.org>

Site: American Association of Oriental Medicine

Location: <http://www.aaom.org>

Site: American Herbalists Guild

Location: <http://www.americanherbalistsguild.com>

Site: American Holistic Health Association

Location: <http://www.ahha.org>

Site: American Holistic Medical Association

Location: <http://www.holisticmedicine.org>

Site: American Massage Therapy Association

Location: <http://www.amtamassage.org>

Site: The Association for Integrative Medicine

Location: <http://www.integrativemedicine.org>

Site: Bastyr University

Location: <http://www.bastyr.edu>

Site: The Continuum Center for Health and Healing

Location: <http://www.healthandhealingny.org>

Site: Center for Mind-Body Medicine

Location: <http://www.cmbm.org>.

Additional Resources for Complementary and Alternative Medicine (cont.)

Site: ClinicalTrials.gov

Location: [www.clinicaltrials.gov](http://www.clinicaltrials.gov)

Site: Cochrane Complementary Medicine Field Registry of Randomized Controlled Trials

Location: [www.compmed.umm.edu/Cochrane/Registry.html](http://www.compmed.umm.edu/Cochrane/Registry.html)

Site: National Cancer Institute (NCI): Office of Cancer Complementary and Alternative Medicine

Location: <http://www3.cancer.gov/occam/>

Site: National Center for Complementary and Alternative Medicine

Location: <http://nccam.nih.gov>

Site: National Library of Medicine: MedlinePlus: Alternative Medicine

Location: <http://www.nlm.nih.gov/medlineplus/alternativemedicine.html>

Site: National Library of Medicine: CAM on PubMed

Location: <http://www.nlm.nih.gov/nccam/camonpubmed.html>

Site: The Richard and Linda Rosenthal Center for Complementary and Alternative Medicine

Location: <http://www.rosenthal.hs.columbia.edu>

Site: University of Maryland School of Medicine Center for Integrative Medicine

Location: <http://www.compmed.umm.edu/Databases.html>

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