

Society for Acupuncture Research Acupuncture and Oriental Medicine (AOM) in the United States

Written by: Carol Braverman, LAc, DiplOM (NCCAOM), Claudette Baker, LAc, DiplAc & CH Herbs, (NCCAOM), President Emeritus, AAAOM and Richard Harris, PhD, Co-President, SAR

Written cooperatively by the American Association of Acupuncture and Oriental Medicine (AAAOM) and the Society for Acupuncture Research (SAR), this document presents a general background on the field of acupuncture as it relates to traditional Chinese medicine and, in addition, provides information on the safety and cost-effectiveness of this intervention as well as the education and entry level requirements for the profession. Further, the AAAOM and SAR jointly request that *fully trained and licensed professionals in the field of acupuncture and Oriental Medicine (AOM) participate in the dialogues that develop healthcare policies and reform at the national level.*

Oriental medicine's paradigm is based on a complex diagnostic system designed to both prevent and treat disease; it is well documented that preventing disease is the most cost-effective way to address health issues. A major health care paradigm shift is occurring in the United States, as evidenced by public demand. Oriental medicine provides time-tested medicine that meets this demand.

We believe it is vital to include acupuncture and Oriental medicine (AOM) in any health care reform program seeking to safeguard and improve public health. Currently, Oriental medicine, inclusive of acupuncture and herbal medicine serves over a billion people globally—people who cannot afford more expensive and sometimes more dangerous forms of medicine such as surgical procedures or incorrectly prescribed medications. To illustrate this we will discuss significant facts that focus on the value of acupuncture for America's healthcare, and we will explore the economic, social, and historical basis for this premise.

Traditional Chinese medicine (TCM or AOM) is a complex healthcare system comprised of interrelated components and presents a sophisticated theory. Only recently has this medical system been examined using a Western scientific approach. Furthermore, the scientific inquiry that has been performed to date examines isolated parts of TCM (or AOM) such as looking at the effects of acupuncture needling alone rather than in conjunction with herbal medicine, massage, diet, etc. as TCM is practiced clinically. TCM is a whole body medical approach, but its scientific inquiry has largely been by performed within a reductionist framework. (Chinese herbs will be discussed in a subsequent entry.)

Five main areas are covered in this paper: the definition, practice and current status of acupuncture in the U.S.; its cost-effectiveness;

its safety; its integration into existing healthcare settings; and acupuncture's mechanisms of action through the lens of scientific research, including results from human clinical trials.

National Scenario

When China faced a healthcare crisis in 1949, with too many people to treat and too few doctors to provide care, they turned to traditional Chinese medicine (TCM), now commonly referred to as AOM. The United States presently faces a similar crisis. We have unmet healthcare needs, virtually no preventative care, and spiraling costs we cannot support.

The Center for Disease Control's (CDC) Advance Data report on the 2002 National Health Interview Survey of 31,044 adults, dated May 27, 2004, cited that between 4%-10% of Americans have tried acupuncture, (2.1 million in 2002) amounting to 5 million visits per year. Acupuncture utilization in the U.S. has thus been largely a "grass roots" movement. Fifty-five percent of adults have used complementary and alternative medicine (CAM) therapies. Most of these visits were paid for out of pocket at an estimated \$27 billion per year. These visits were either an adjunct to conventional treatment, with 26% reporting they did so on their doctor's recommendation, and 28% who did not believe that conventional care was addressing their chief complaint. In sum, the CDC Advance Data review of the NHIS states that "most people use CAM to treat and/or prevent musculoskeletal conditions or other conditions associated with chronic or recurring pain, [because] many forms of chronic pain are resistant to conventional medical treatment." (Barnes, 2004)

Hospitals and universities have increasingly expanded their services to include

departments of complementary and integrative medicine. In 2004, the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) developed and adopted a definition of integrative medicine: "Integrative Medicine is the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, healthcare professionals and disciplines to achieve optimal health and healing." Thirty-eight members comprise CAHCIM, a list that includes Harvard Medical School, Yale University, Stanford University, the Weill Cornell Center for Complementary and Integrative Medicine, Duke University, Columbia University, and the Mayo Clinic. (<http://www.imconsortium.org>)

However, despite this movement towards complementary and integrative medicine, the inclusion of acupuncture primarily functions outside mainstream health delivery mechanisms. While the majority of hospitals and healthcare centers do not offer AOM as an option for their patients, it is important to note that two of the finest medical schools in the U.S. began acupuncture programs in the early 1970s. Harvard began research in 1974 to study the effects of reducing pain with acupuncture under the supervision of Gene Smith, PhD at Massachusetts General Hospital. UCLA's Acupuncture Pain Clinic opened in 1972 and continues operation today. The directors of several departments at UCLA's medical school recognized the important advantages of acupuncture to treat medical conditions that Western medicine either could not treat successfully or was ineffective in resolving in a cost-effective way.

As acupuncture has become part of the medical landscape, it has been scrutinized more than any other CAM

therapy. "Numerous surveys show that, of all the complementary medical systems, acupuncture enjoys the most credibility in the medical community. It (acupuncture) is being acknowledged broadly by the medical profession, seen with the advent of certification licenses for medical doctors, including neurologists, anesthesiologists, and specialists in physical medicine." (NCCAM 2007; NIH, 1997; Kaptchuk, 2002)

The rapid expansion of acupuncture in the United States is a result of the high degree of patient and physician acceptance, due in part to rigorous credentialing and examination processes. Graduate level educational programs are programmatically accredited, requiring four to six years to complete (after completing the prerequisite college course work required for matriculation). These training programs typically involve at least two years of clinical rotation, and most colleges award a master's of science degree. The licensed acupuncturist (LAc) is a highly trained clinical specialist who provides care based on course work in biomedical sciences in addition to traditional Asian medicine (AOM).

AOM Definition

Acupuncture and Oriental medicine (AOM) is an original form of holistic medicine, which includes: acupuncture, Asian herbal medicine, medical massage, diet modifications, and breathing and movement therapies. A licensed acupuncturist may incorporate a variety of needling styles such as Japanese acupuncture, auricular acupuncture, and traditional acupuncture with the Western technologies of electrical stimulation and low-level, cold laser. Therapeutically, the selection from this choice of modalities is used to support the health and well-being of the entire person. The NIH considers AOM, or traditional Chinese medicine (TCM), to be a whole medical system of theory and practice that has evolved independently from, or parallel to, allopathic medicine. For more information, see www.nccam.nih.gov/health/backgrounds/wholemed.htm#tcm.

AOM is a safe and cost-effective form of medicine that has been continuously practiced and refined—in Asia for more than 2,500 years, in parts of Europe for more than 300 years, and in the U.S. since the arrival of the first Chinese immigrants. Oriental medicine has gained the trust of Asian peoples for millennia, including pregnant women and young children, precisely because of its safety, efficacy, and accessibility.

Within the U.S. acupuncture and Oriental medicine serves a broad population, covering preventive health maintenance, treatment of disease, and drug and alcohol detox procedures. It is used to improve the quality of life in end-stage disease as well as to manage and treat many chronic conditions. Conventional medicine (i.e. pharmaceutical drugs, high cost procedures, etc.) often ineffectively treats chronic disorders and in some cases compounds the problem (i.e. negative side effects of medications). Currently, acupuncture is being successfully used adjunctively with chemotherapy, infertility treatments, physical rehabilitation, and immune support. (Eisenberg, 2002)

AOM Education and Licensure in the United States

In 1976, the first college of Oriental medicine was recognized by the Commonwealth of Massachusetts (the New England School of Acupuncture). Today there are over 65 schools and colleges with accredited or candidacy status with the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) that qualify to receive federally funded financial aid. Today there are 8075 students attending accredited AOM colleges. (1)

In 1973 Oregon and Nevada were the first states to license the practice of acupuncture. Currently, acupuncture is regulated in 42 states and the District of Columbia. All states but California (which administers its own comprehensive exam) require passage of the NCCAOM certification exam as one of the criteria to obtain a state license. Twenty-two states also include herbal medicine in their scope of practice. As of 2008, forty states have independent practice in their state regulations and licensed acupuncturists (LAc) hold the title of "Primary Care Practitioner" in five states. There are nearly 26,000 licensed acupuncture practitioners in the U.S. today.

Board Certification

The National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) was established in 1982 as a non-profit organization to "establish, assess, and promote recognized standards of competence and safety in acupuncture and Oriental medicine for the protection and benefit of the public." Since its inception, the NCCAOM has issued more than 19,000 certificates in acupuncture, Oriental medicine, Chinese herbology, and Asian bodywork therapy. (2)

AOM Practice in the U.S.

Today in the U.S. there are tens of thousands of patients receiving primary care under the exclusive care of licensed acupuncturists. Licensed acupuncturists treat issues such as acute and chronic pain, (i.e. headache, back pain, neck pain, knee pain, osteoarthritis, post-surgical pain and recovery), nausea, asthma, allergies, migraines, hypertension, weight loss, depression, anxiety, repetitive stress disorders, premenstrual syndrome (PMS), reproductive issues, male and female infertility, side effects of cancer treatments, digestive issues, irritable bowel syndrome (IBS), reduction of the side effects of medication in general, morning sickness, general health, wellness, and stress reduction.

Acupuncture in the U.S.

The Cost-Effectiveness of Acupuncture

The impact of the potential usefulness of acupuncture for the U.S. health care system is exemplified by the cost-effectiveness of this intervention. The equipment needed to perform acupuncture is minimal. The essential materials are needles, isopropyl alcohol or antimicrobial solution, cotton balls, and a biohazard container. Needles range in price from \$3.00 to \$11.00 per box of 100. If the average acupuncture treatment uses 8-20 needles, the total estimated cost in materials is less than \$2.00 per session.

Licensed acupuncturist fees for services range from \$60-\$100 per treatment, a range largely determined by locale, with costs generally higher in urban populations.

As added benefit, acupuncture effects can be cumulative, with sustained symptom relief for weeks to months following treatment. Research in chronic pain has shown that 8-12 treatments are effective in the sustained alleviation of many pain syndromes (Berman et al. 2004, Witt et al. 2006). Therefore, the up-front cost of seeing a licensed acupuncturist may outweigh the cost of multiple visits to the allopathic doctor. Furthermore, since many prescription medications often have side effects which drive patients to seek additional health care, acupuncture can be a money-saving option. Recent studies entitled, "Quality of life and cost-effectiveness of acupuncture in patients with osteoarthritis," "Cost-effectiveness of acupuncture treatment in patients with headache pain," and Cost Effectiveness analysis of a randomized trial of acupuncture for chronic headache in primary care (Reinhold T, Witt CM, Jena S, Brinkhaus

continued on page 24

SAR Research continued from page 23

B, Willich S, 2007; Wonderling D, Vickers AJ, Grieve R, McCarney R, 2004) demonstrate the cost-effectiveness of this intervention: while the initial up-front cost may be slightly higher, this is offset by the improved quality of life, reduced use of prescription medications, reduction of days missed from work, and, in comparison with conventional treatment methods, is actually cheaper. For example, the Medical Expenditure Panel Survey (MEPS) wrote Statistical Brief # 115 reviewing the annual cost of headaches in the U.S. Their study concluded that in 2003 the average cost of treating headaches (doctor visits and prescription medications) was \$566. An estimated 3.5% of the population, or 7.5 million people, experience chronic tension and/or migraine headaches, which equates to roughly \$4.25 billion dollars spent per year. This figure does not include over-the-counter medications for headache relief.

Other studies reporting the cost-effectiveness of acupuncture include: *Acupuncture for severe angina pectoris* (Ballegaard S, Johannessen A, Karpatschhof B, Nyboe J, 1999); *Acupuncture for persistent low back pain* (Wonderling D, Vickers AJ, Grieve R, McCarney R, 2004); and *Transcutaneous Electric Nerve Stimulation for carpal tunnel syndrome*; (Ratcliffe J, Thomas KJ, MacPherson H, Brazier J, 2006; Naeser MA, Hahn KK, Lieberman BE, Branco KF 2002). The Carpal tunnel syndrome study showed a significant cost-savings: in 2002, one case of CTS without surgical intervention costs an estimated \$5,246, versus an estimated \$1,000, based on 15 visits at \$65 per visit. This represents a savings of \$4,000 per patient. In Table 3 from the Branco & Naeser's 1999 paper in the *Journal of Alternative and Complementary Medicine*, the cost for CTS surgery was \$21,000 per patient, which would average \$12,000 per patient for Western intervention (\$5,000 without surgery). Using the calculation above, the savings in real dollars, using laser acupuncture, would average \$11,000 per patient. There were one million cases of CTS in 1999, which would equate to \$11 billion savings. It should be noted other methods of acupuncture are effective in treating CTS, but for the purposes of this paper we are citing this source to emphasize our point.

The Safety of Acupuncture

Acupuncture is a minimally invasive option for many conditions and has no negative interactions with concurrent prescription drugs. Since acupuncture produces no

serious side effects, it may simultaneously alleviate symptoms while reducing the need for prescription drugs. Studies have proven that acupuncture is safe when administered by a licensed professional who has training in anatomy and the skill set required for needling. The ratio of treatments to adverse incidents is statistically extremely low. For instance, the York study included 574 acupuncturists giving 34,407 treatments with 43 minor adverse effects. The majority of these were a mild bruising or bleeding at the needled site. Two point eight percent of patients reported a temporary worsening of symptoms following treatment, but 86% of this same group had improvement after the initial aggravation. In general, the most commonly reported reactions consisted of patients feeling either more relaxed or more energized, indicating an overall positive response to the experience. Another study of 31,822 treatments reported that of the 48 reported minor incidents, none was serious, and 70% of the cases showed improvement of conditions following treatment. (McPherson, et al. 2001; White, et al. 2001) This is in stark contrast to the number of side effects often occurring with medications. Acupuncture should be considered as a useful, low-cost intervention to treat chronic as well as acute conditions.

The Integration of Acupuncture into Existing Healthcare Settings

Healthcare settings appropriate for integration of acupuncture are post-surgical healing, neurological rehabilitation, pain management onsite and offsite, and in oncology as an adjunct for the side effects of chemotherapy and radiation, as well as anxiety. Acupuncture can be utilized as support for outpatient services, treating an array of symptoms of many conditions.

Physicians can refer patients to acupuncturists and work together with him/her as a treatment team. Physicians can also refer patients to community acupuncture clinics (<http://www.communityacupuncturenetwork.org/>) or local acupuncture school student clinics for low-cost treatment or follow-up care.

Acupuncture's Mechanism of Action

Acupuncture's specific mechanism of action is largely unknown. Work in the 70s and 80s demonstrated that a component of acupuncture analgesia relied on the body's own pain-reducing neurotransmitters—the endorphins (Pomeranz and Chiu, 1976). Acupuncture may cause a release of these proteins within

the nervous system, which then inhibits incoming pain signals. More recent studies suggest that acupuncture may have a more widespread influence on the central nervous system (reviewed by Dhond et al. 2007). Acupuncture needle stimulation appears to deactivate certain parts of the limbic system and thereby regulate sympathetic and parasympathetic activity. This proposed central neurobiological effect is consistent with the wide array of conditions which acupuncture is proposed to treat. Finally, in addition to central neurobiological effects, it has been shown to reduce peripheral inflammation (Zhang et al. 2005) and to change connective tissue around the needle (Langevin et al. 2006), which may also suggest other hereto unknown mechanisms of action. To find out more about acupuncture, visit the National Institutes of Health: <http://www.nih.gov>.

Human Clinical Trials that Show Acupuncture Effects

Over 500 clinical trials measuring the efficacy of acupuncture have been conducted in the past three decades. A variety of disease conditions or their symptoms have been the subject of these studies; many, but not all, are of musculoskeletal origin. For example, the etiologies of osteoarthritis (OA) of the knee, fibromyalgia, and rheumatoid arthritis (RA) differ: OA is mechanical wear-and-tear, fibromyalgia is believed to be caused by a dysfunction in neurotransmitter signaling, and RA is an autoimmune disorder. RA and OA primarily affect the musculoskeletal system, whereas fibromyalgia has a more neurobiological etiology.

There are fifty systematic reviews of acupuncture in the Cochrane databases. Overall, the trend has been favorable, advocating the use of acupuncture in a clinical setting as an adjunctive treatment with conventional therapies, where suitable. (Witt CM, Brinkhaus B, Reinhold T, Willich SN, 2006)

1) Acupuncture for osteoarthritis of the knee

Title: *Effectiveness of acupuncture as adjunctive therapy in osteoarthritis of the knee: a randomized, controlled trial*

Conclusion: Acupuncture seems to provide improvement in function and pain relief as an adjunctive therapy for osteoarthritis of the knee when compared with credible sham acupuncture and education control groups.

Berman BM, et al. (2004) *Ann Intern Med*, 141 (12) 901-10

Title: Acupuncture in patients with osteoarthritis of the knee or hip

Conclusion: These results indicate that acupuncture plus routine care is associated with marked clinical improvement in patients with chronic OA-associated pain of the knee or hip.

Witt et al. (2006) *Arthritis & Rheumatism*, 54 (11) 3485-3493

2) Acupuncture for chronic low back pain

Title: German acupuncture trials (GERAC) for chronic low back pain: randomized, multicenter, blinded, parallel-group trial with 3 groups

Conclusion: Low back pain improved after acupuncture treatment for at least 6 months. Effectiveness of acupuncture, either verum or sham, was almost twice that of conventional therapy.

Haake, et al. (2007) *Arch Intern Med*, 167 (17), 1892-1898

Title: Meta-Analysis for low back pain

Conclusion: In a survey of 33 RCTs, Manheimer et al. concluded acupuncture effectively relieves chronic low back pain.

Manheimer et al. (2005) *Ann Intern Med*, 142, 651-663.

3) Acupuncture for fibromyalgia

Title: Improvement in fibromyalgia symptoms with acupuncture: Results of a randomized controlled trial

Discussion and conclusion: A Mayo Clinic prospective, partially blinded, controlled, randomized clinical trial found acupuncture to be more effective than sham acupuncture in the treatment of fibromyalgia symptoms. Total fibromyalgia symptoms were significantly improved in the true acupuncture compared to the sham controls, with the greatest improvements in symptoms of fatigue and anxiety.

Martin D, Sletten CD, Williams BA, Berger IH, (2006) *Mayo Clinic Proceedings*, 81(6): 749-757

4) Acupuncture for rheumatoid arthritis

Title: Ottawa panel evidence-based clinical practice guidelines for electrotherapy and thermotherapy interventions in the management of rheumatoid arthritis in adults

Discussion and conclusion: The Ottawa panel recommends the use of low-level laser therapy, therapeutic ultrasound, thermotherapy, electrical stimulation, and transcutaneous electrical nerve stimulation for the management of rheumatoid arthritis.

Brosseau L, et al. (2004) *Physical Therapy*, 84 (11) 1016-43

“Currently, Oriental medicine, inclusive of acupuncture and herbal medicine, serves over a billion people globally—people who cannot afford more expensive and sometimes more dangerous forms of medicine such as surgical procedures or incorrectly prescribed medications.”

5) Acupuncture for chemotherapy-induced nausea and vomiting

Title: Acupuncture: role in comprehensive cancer care— a primer for the oncologist and review of the literature

Conclusion: Antiemetic studies are the most prevalent and contain the most promising results [that] acupuncture significantly reduces the number of emesis episodes for patients receiving chemotherapy.

Cohen AJ, Menter A, Hale L (2005) *Integrative Cancer Therapies*, 4(2), 131-43

6) Acupuncture for peri- and post-operative nausea and vomiting

Title: Perioperative acupuncture and related techniques

Discussion: Acupuncture can be used for treatment and prophylaxis of postoperative nausea and vomiting in routine clinical practice in combination with or as an alternative to conventional anti-emetics when administered before induction of general anesthesia.

Chernyak GV, Sessler DI (2005) *Anesthesiology*, 102 (5), 1031-1049

7) Acupuncture for TMJ (temporomandibular joint dysfunction)

Title: The efficacy of acupuncture in the treatment of temporomandibular joint myofascial pain: a randomized controlled trial

Conclusion: Acupuncture had a positive influence on the signs and symptoms of temporomandibular joint myofascial pain.

Smith P, Mossdrop D, Davies S, Sloan P, Al-Ani Z (2007). *Journal of Dentistry*, 35(3), 259-67

8) Acupuncture for headaches

Title: Acupuncture for chronic headache in primary care: Large, pragmatic, randomized trial

Conclusion: Acupuncture leads to persisting, clinically relevant benefits for primary care patients with chronic headache, particularly migraine, at a small additional cost, conclude the authors. Expansion of existing services should be considered.

Vickers, AJ, et al. (2004) *BMJ*, 44 (8): 846-850

Title: Acupuncture in patients with headache

Conclusion: Acupuncture provides marked clinical improvement, approximately reducing headaches by 50%, compared with the group that did not receive acupuncture and did not have significant relief from headaches.

Jena S, Witt C, Brinkhaus B, Wegscheider K, Willich SN (2008) *Cephalgia* 28 (9); 969-979

9) Acupuncture increases pregnancy in IVF

Title: Influence of acupuncture on the pregnancy rate in patients who undergo assisted reproduction therapy: a prospective, randomized trial

Conclusion: This study evaluates the impact acupuncture has when used to the ART method of embryo transfer. Statistically the results are significant; the group receiving acupuncture had a pregnancy rate of 42.5% versus the control group's 26.3%.

Paulus, EW, Zhang M, Strehler E, El-Danasouri I, Sterzik K (2002); Department of Reproductive Medicine, Christian-Lauritzen Institut, Ulm, Germany; *Fertility and Sterility*, 77(4): 891

10) Acupuncture increases IVF results and maintains viable pregnancy

Title: Acupuncture on the day of embryo transfer (ET) significantly improves the reproductive outcome in infertile women: a prospective, randomized trial

Conclusion: This study evaluates the significance of coordinating timing of acupuncture treatment, to get maximum benefit, i.e., achieving a pregnancy. The authors found pregnancy rates were significantly higher when receiving acupuncture on the day of embryo transfer, 39%, versus the control group's 26%. Further, the acupuncture group maintained pregnancy at a higher rate than the control group, 36% versus 22%.

Westergaard LG, Mao Q, Kroglund M, Sandrini S, Lenz S, Grinsted J (2006); Fertility Clinic Trianglen, Hellerup, Denmark; *Fertility and Sterility*, 85(5): 1341-6

continued on page 26

The American Association of Acupuncture and Oriental Medicine (AAAOM) was founded in 1981 to be the unifying force for American acupuncturists committed to high ethical and educational standards and a well-regulated profession to ensure the safety of the public. As the sole national professional AOM association, its mission statement is "To promote excellence and integrity in the professional practice of acupuncture and Oriental medicine in order to enhance public health and well-being." For more information, please visit www.aaaomonline.org.

The Society for Acupuncture Research (SAR), founded in 1993, is a 501(c)3 non-profit organization whose mission "is to promote, advance and disseminate scientific inquiry into Oriental medicine systems, which include acupuncture, herbal therapy and other modalities. We value quantitative and qualitative research addressing clinical efficacy, physiological mechanisms, patterns of use and theoretical foundations." For more information, please visit www.acupunctureresearch.org.

Contacts:

American Association of Acupuncture & Oriental Medicine
PO Box 162340
Sacramento, CA 95816
916-443-4770
www.aaaomonline.org

Society for Acupuncture Research
Richard Harris, PhD, Co-President
www.acupunctureresearch.org

References:

- Astin JA, Marie A, Pelletier KR, Hansen E, Haskell WL (1998). A review of the incorporation of complementary and alternative medicine by mainstream physicians. *Archives of Internal Medicine*, 158: 2303-10
- Audette JF, Ryan AH (2004). The role of acupuncture in pain management. *Phys Med Rehab Clin N Am* 15 (4), 749-772
- Ballegaard S, Johannessen A, Kamperschof B, Nyboe J. (1999). Addition of acupuncture and self-care education in the treatment of patients with severe angina pectoris may be cost beneficial: an open, prospective study. *Journal of Alternative and Complementary Medicine*, 5(5):405-13. Retrieved 1/9/09 from PubMed: <http://www.ncbi.nlm.nih.gov/sites/entrez>
- Barnes PM, Powell-Griner E, McFann K, Nabin RL. (2004). Complementary and alternative medicine use among adults: United States, 2002. *CDC Advance Data Report #343*.
- Bertram, BM, Lao L, Langenberg F, Lee WL, et al. (2004): Effectiveness of Acupuncture as Adjunctive Therapy in Osteoarthritis of the Knee: a Randomized, Controlled Trial. *Annals of Internal Medicine*, 141 (12), 901-910
- Ceccherelli F, Gagliardi G, Ruzzante L, Giron G (2002): Acupuncture modulation of capsaicin-induced inflammation: effect of intraperitoneal and local administration of naloxone in rats. A blinded controlled study. *The Journal of Alternative and Complementary Medicine*, 8 (3), 341-349
- Community Acupuncture Network. Retrieved 12/19/08: <http://www.communityacupuncturenetwork.org/>
- Consortium of Academic Health Centers for Integrative Medicine. Retrieved 7/15/07: <http://www.inconsortium.org/cabcin/home.html>
- Center for Disease Control website (2007). Retrieved 7/11/2007: <http://www.cdc.gov/nchs/nhis.htm>
- Center for Disease Control website (2008). Retrieved 12/19/08: <http://www.cdc.gov/nchs/about/major/nhis/released200812.htm>
- Diond, RP, Kettner N, and Napadow V. Neuroimaging acupuncture effects in the human brain. *J Altern Complement Med*, 2007, 13(6): p. 603-16.
- Eisenberg DM, Kaptchuk, TJ (2002): Acupuncture: Theory, efficacy, and practice. *Annals of Internal Medicine*, 136, 374-383.
- Ernst E (2006): Acupuncture- a critical analysis. *Journal of Internal Medicine*, 259 (2),125-137
- Jena S, Witt C, Brinkhaus B, Wegscheider K, Willich SN (2008): Acupuncture in patients with headache. *Cephalgia* 28 (9): 969-979
- Kim SY, et al. (2006) The anti-inflammatory effects of low- and high-frequency electroacupuncture are mediated by peripheral opioids in a mouse air pouch inflammation model. *The Journal of Alternative and Complementary Medicine*, 12 (1), 39-44
- Kaptchuk T (2002). Acupuncture: Theory, efficacy, and practice. *Annals of Internal Medicine*, 136 (5), 374
- Langevin, H M, et al. (2006) Subcutaneous tissue fibroblast cytoskeletal remodeling induced by acupuncture: Evidence for a mechanotransduction-based mechanism. *J Cell Physiol*, 207(3): p. 767-74.
- Litscher G, Rachbauer D, Ropele S, Wang L, Schikora D, Fazekas F, Ebner F (2004): Acupuncture using laser needles modulates brain function: first evidence from functional transcranial Doppler sonography and functional magnetic imaging. *Lasers in Medical Science*, 19 (1), 2-13
- MacPherson H, et al. (2001): The York acupuncture safety study: prospective survey of 34,000 Treatments by traditional acupuncturists. *British Medical Journal*, 323 (7311): 486
- Naeser MA, Hahn KK, Lieberman BE, Branco KF (2002). Carpal tunnel syndrome treated with low-level laser and microamperes transcutaneous electric nerve stimulation: A controlled study. *Arch Phys Med Rehab*, 83 (7): 978-988.
- Branco K, Naeser MA. Carpal tunnel syndrome: Clinical outcome after low-level laser acupuncture, microamps transcutaneous electrical nerve stimulation, and other alternative therapies—An open protocol study. *Journal of Alternative and Complementary Medicine*. 1999; 5(1): 5-26.
- National Center for Complementary and Alternative Medicine website. Retrieved 12/19/08: <http://nccam.nih.gov/health/acupuncture>
- Pomeranz, B and Chiu D. Naloxone blockade of acupuncture analgesia: endorphin implicated. *Life Sci*, 1976, 19(11): p. 1757-62.
- Pomeranz B. (1996). Scientific research into acupuncture for the relief of pain. *Journal of Alternative and Complementary Medicine*, 2 (1), 53-60
- Ratcliffe J, Thomas KJ, MacPherson H, Brazier J (2006): A randomized controlled trial of acupuncture care for persistent low back pain: cost effectiveness analysis. *British Medical Journal*, 333(7569):626. Retrieved 1/9/09 from British Medical Journal: <http://www.bmj.com/cgi/content/full/333/7569/626>
- Reinhold T, Witt CM, Jena S, Brinkhaus B, Willich S (2008) *Eur J Health Econ*, 9; 2009-219
- Scharf, HP, et al. (2006). Acupuncture and knee osteoarthritis. *Ann Intern Med*, 145 (1): 12-20
- White A, Hayhoe A, Hart A, Ernst E (2001): Adverse events following acupuncture: prospective survey of 32,000 consultations with doctors and physiotherapists. *British Medical Journal*, 323 (7311), 485-486
- Witt CM, Brinkhaus B, Reinhold T, Willich SN (2006). Efficacy, effectiveness, safety and costs of acupuncture for chronic pain—results of a large research initiative. *Acupuncture in Medicine*, 24(Suppl), 533-539.
- Witt CM, Jena S, Brinkhaus B, Liecker B, Wegscheider K, Willich SN (2006). Acupuncture in patients with osteoarthritis of the knee or hip. *Arthritis & Rheumatism*, 54 (11): 3485-3493
- Wonderling D, Vickers AJ, Grieve R, McCahey R (2004). Cost effectiveness analysis of a randomized trial of acupuncture for chronic headache in primary care. *British Medical Journal*, 328(7442):747. Retrieved 1/9/09 from PubMed: <http://www.ncbi.nlm.nih.gov/pubmed/15023830>
- Zhang RX, Liao L, Wang X, Fan A, Wang E, Ren K, Berman BM (2005): Electroacupuncture attenuates inflammation in a rat model. *The Journal of Alternative and Complementary Medicine*, 2 (1), 135-142

Endnotes:

(1) The Accreditation Commission for Acupuncture and Oriental Medicine is the national accrediting agency recognized by the U.S. Department of Education to accredit master's-level programs in the acupuncture and Oriental medicine profession. The three to four year programs in Oriental medicine involve extensive didactic and clinical training. As an independent body, ACAOM accredits first professional master's degree and professional master's level certificate and diploma programs in both acupuncture and in Oriental medicine (with a concentration in both acupuncture and herbal therapies). The Commission fosters excellence in acupuncture and Oriental medicine education by establishing policies and standards that govern the accreditation process for acupuncture and Oriental medicine programs.

ACAOM's Program Requirements include:

Acupuncture: 3 Yrs/27 months, 1905 hours, 105 semester credits

Acupuncture & Oriental Medicine: 4 Years/36 Months, 2,625 Hours, 146 Semester Credits.

Doctoral Program: To be considered for accreditation, a DAOM program must be sponsored by an institution accredited by: 1) ACAOM; 2) an accrediting agency recognized by the U.S. Secretary of Education; or, 3) in the case of Canadian programs, the institution must be publicly recognized by the Association of Universities and Colleges of Canada as a member in good standing; 1200 hours beyond master's program, 650 clinical hours. For more information, please visit www.aaaom.org.

(2) It is a considerable professional achievement to earn the designation "Diplomate (NCCAOM)." NCCAOM Certification indicates to employers, patients, and peers that one has met national standards for the safe and competent practice of acupuncture and Oriental medicine as defined by the profession. National board certification in acupuncture has been the mark of excellence in acupuncture since the inception of the Commission. The NCCAOM is a member of the National Organization for Competency Assurance (NOCA), and its certification programs are accredited by the National Commission for Certifying Agencies (NCCA). NCCA standards for accreditation exceed the requirements set forth by the American Psychological Association and the U.S. Employment Opportunity Commission. In 2007, NCCAOM celebrated its 25th anniversary. For more information, please visit www.nccaom.org.