

Complementary and Alternative Medicine

Focus on Research and Care

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Complementary and Alternative Medicine: Focus on Research and Care is the newsletter of the National Center for Complementary and Alternative Medicine (NCCAM), a component of the National Institutes of Health, U.S. Department of Health and Human Services.

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Low-Back Pain and CAM

Four out of five American adults will experience low-back pain (LBP) at some time in their lives. If you are a health care provider, you have almost certainly cared for such patients. No doubt, some of them have asked you about using complementary and alternative medicine (CAM) to relieve their pain. This article provides an overview of the use of CAM therapies for LBP and lists evidence-based sources for additional information.

A Challenging Condition

LBP is a major public health burden in the United States. It is the leading cause of work-related disability and missed days of work, and the fifth-most-common reason for physician visits. A 2006 report



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estimated that annual costs of LBP in this country exceed \$100 billion. Two-thirds of that is for indirect costs, such as lost wages and reduced productivity.

Definitions of nonspecific LBP and its subtypes in the literature vary; a representative definition is in the

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Moving the Economy— and Biomedical Discovery—Ahead

The American Recovery and Reinvestment Act of 2009 (also known as the Recovery Act) was signed into law by President Obama on February 17, 2009. The Act's goals include preserving and creating jobs, promoting economic recovery, and increasing economic efficiency by spurring technological advances in science and health. Groundbreaking scientific research to improve health, and construction and renovation of research and educational facilities, are among the targeted investment areas.



Biologist Yunhua Li, M.S., of NCCAM's Division of Intramural Research

NIH will receive approximately \$10.4 billion for use in fiscal years 2009 and 2010, of which NCCAM's share is approximately \$31 million. The Center

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Planning Process To Invite Public Input

NCCAM is launching the process of developing its third strategic plan. In the first phase, NCCAM's many stakeholders will be invited to submit comment, through the Web, on the Center's future activities and direction.

Jack Killen, M.D., Deputy Director of NCCAM, is leading the planning endeavor, which has a target completion date of September 2010. In an interview with *Complementary and Alternative Medicine*, Dr. Killen noted that the planning process and the resulting plan will be

- Science- and data-driven
- Grounded in NCCAM's mission
- Conducted under the auspices of the National Advisory Council for Complementary and Alternative Medicine (NACCAM)
- Carried out and developed with active inclusion and participation of NCCAM's highly diverse stakeholder community
- Built on collaborations and partnerships across scientific fields and disciplines and NIH institutes and centers.

The planning process will be conducted in three phases:

1. The Center will invite several waves of stakeholder input on various strategic topics and questions posted for comment on the NCCAM Web site.
2. Several topical workshops and "think tank" meetings will be based on input received in Phase 1.
3. There will be posting for public comment of a draft strategic plan and development, in consultation with the NACCAM, of the final document, to be released by September 2010.

"Given the number of exciting and promising opportunities to improve health and health care currently on the CAM research horizon and the high level of public and scientific interest in CAM," Dr. Killen said, "it is more important than ever for the Center to have a strategic framework for priorities and decisionmaking. We hope that this newsletter's readers, as well as our other stakeholders, will take the time to participate actively in this process."

Updates on strategic planning will be posted at nccam.nih.gov.

NCCAM Exhibits at Upcoming National Meetings

American Academy of Nurse Practitioners, June 17-21, Nashville

Association of American Indian Physicians, July 22-26, Alexandria, Virginia

National Medical Association, July 25-29, Las Vegas

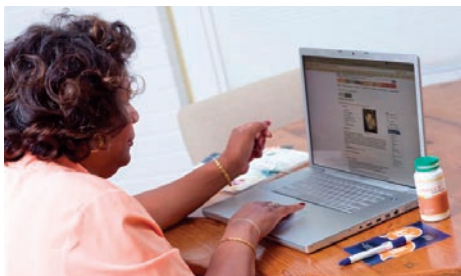
American Psychological Association, August 6-9, Toronto

NIH Offers Web Site Especially for Seniors

Older adults are frequent users of CAM. For example, 41 percent of adults in the United States who are aged 60 to 69 use CAM, according to the 2007 National Health Interview Survey. Seniors are also one of the fastest-growing age groups among Internet users. NIH offers a Web site of health information, NIHSeniorHealth, that is specially tailored to the interests and needs of older adults.

NCCAM developed a module on CAM that launched in December 2008. The layout is simple and clear, and the text short and easy to read. Users can click on options to make text bigger, change its color, or have it read aloud. Topics include definitions, CAM therapies (including short videos on several therapies), CAM for conditions affecting older adults, how to be an informed consumer, and how to talk candidly to health care providers about CAM use.

Users are responding to the new CAM section, as it was the second-most-viewed topic on NIHSeniorHealth during the first quarter of 2009. NIHSeniorHealth is a joint venture of the National Library of Medicine and the National Institute on Aging at NIH.



Seniors are a fast-growing group of Internet users.

To view the NIHSeniorHealth Web site, go to <http://nihseniorhealth.gov>.

Summer 2009 is a very busy and exciting time at the Center. In addition to our usual business, our staff is working very hard to put plans into place related to the American Recovery and Reinvestment Act, which President Obama signed into law in February (see pg. 1).



We are grateful to Congress and the Administration for this special influx of resources to further progress in biomedical research and improve the health of our Nation's economy. The next 2 years will be especially exciting for CAM research as investigators across the country pursue a multitude of research projects made possible by the Recovery Act.

As the Nation considers the very challenging topic of health care reform, the conversation will most certainly include the role of integrative medicine in preventing and treating disease and promoting health and wellness. These topics were explored at the Institute of

From the Director

Medicine's recent "Summit on Integrative Medicine and the Health of the Public" (see pg. 12).

As I participated in the summit, I was excited to hear and meet so many people concerned with the future direction of health and health care in America. Facilitating the integration of proven CAM approaches and conventional medicine is a key goal of the Center.

We have many pressing health-related problems in our Nation today, and one of them is pain—especially chronic pain that is difficult to treat and places a heavy burden on afflicted individuals, their family members, the health care system, employers, and others. One of our articles in this issue of the newsletter addresses nonspecific low-back pain, which 4 out of 5 Americans experience at some point in their lives and which can, unfortunately, become chronic.

The evidence is growing that some CAM therapies, especially the manipulative and body-based practices, may be helpful for some people with low-back pain. NCCAM plans to make research on nonpharmacologic CAM approaches for this condition a priority. On May 27, NCCAM, in collaboration with several other NIH institutes and centers, convened an expert panel to help develop that research agenda.

I hope that you will visit our Web site and read our news publications to follow our progress in these and other areas, and provide input on the Center's future activities and direction through our strategic planning process.

Josephine P. Briggs, M.D.
Director



Calendar of Events

This calendar lists CAM-related events in which NCCAM or other components of NIH are sponsors or participants. It includes information available at press time and Web sites for more information.

SEPTEMBER 2009

Meeting of the National Advisory Council for Complementary and Alternative Medicine: September 11. *Location:* Neuroscience Center Building, 6001 Executive Blvd., Rockville, Maryland. See nccam.nih.gov/about/naccam/.

DECEMBER 2009

Scientific Symposium in Honor of NCCAM's 10th Anniversary: December 8. *Location:* Masur Auditorium, Building 10, NIH, Bethesda, Maryland. See nccam.nih.gov/news/events/.

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will use these additional funds to further advance the field of CAM research.

“We at NCCAM appreciate that the President and Congress have recognized, in this way, both the economic and health impacts of biomedical and behavioral research,” said Josephine P. Briggs, M.D., NCCAM Director. “I anticipate that the Recovery Act will have an impact not only on the scientists who will receive funds and the allied health workers, technicians, students, and others who work with them, but, more broadly, upon our Nation’s health.”

At press time, NCCAM initiatives under the Recovery Act include:

■ **NIH Challenge Grants in Health and Science Research**, for projects in specific topic areas (see box below) that would benefit from a 2-year jumpstart in funding

■ **NCCAM Grand Opportunities (“GO”) Grants**, for high-impact ideas that lend themselves to short-term, nonrenewable funding and may lay a foundation for new fields of investigation

■ **Summer Research Opportunities for Students and Science Educators**, to help accelerate efforts in either clinical trial recruitment or basic and translational research

■ **Administrative Supplements**, to accelerate progress in ongoing project grants

■ **Competitive Revision Applications**, to expand the scope of ongoing project grants that are preliminary, developmental, or pilot studies and address certain high-priority topics.

For the latest information on NCCAM and the Recovery Act, go to nccam.nih.gov/recovery/. The official site for all activities under the Recovery Act is www.recovery.gov.

“I anticipate that the Recovery Act will have an impact not only on the scientists who will receive funds and the allied health workers, technicians, students, and others who work with them, but, more broadly, upon our Nation’s health.”
— Josephine P. Briggs, M.D.



Antioxidant-rich berries

NCCAM Topics for NIH Challenge Grants

- Ethical issues associated with the electronic sharing of health information
- Psychoneuroimmunology biomarkers of stress
- Antioxidant biomarkers
- Omega-3 fatty acid biomarkers
- Comparative effectiveness studies of nonpharmacological treatments for chronic low-back pain
- Comparative effectiveness studies of CAM
- Imaging correlates of brain states
- Development and validation of other translational tools to improve comparability and generalizability of studies and facilitate rigorous research on CAM

Low-Back Pain: Research and Delivery of Evidence-Based Care

An Interview With Gert Bronfort, D.C., Ph.D.

Gert Bronfort, D.C., Ph.D., is vice president of research and director of the musculoskeletal research program at Northwestern Health Sciences University (NWHSU) in Minneapolis. He is also a member of NCCAM's National Advisory Council for Complementary and Alternative Medicine (NACCAM). After receiving his Doctor of Chiropractic degree from Canadian Memorial Chiropractic College, Dr. Bronfort worked in private practice and research consulting in Denmark before moving to the United States in 1988. Also the holder of a Ph.D. in extramural medicine from Vrije University, in Amsterdam, the Netherlands, Dr. Bronfort oversees patient care in the context of "pragmatic clinical trials"—a type of trial designed to test treatments in everyday clinical-practice settings—for low-back, neck, and headache conditions. An associate editor for the Cochrane Back Review Group, Dr. Bronfort also authors systematic reviews and serves on several national practice committees.



Gert Bronfort, D.C., Ph.D.

Can you provide any recommendations on preventing low-back pain (LBP)?

GB: There is currently insufficient evidence to suggest that LBP can be prevented before the first episode. However, there is good evidence that physical exercise helps prevent and may diminish the impact of recurrence. There is insufficient evidence to recommend for or against a specific type or intensity of exercise.

How does a provider select the most appropriate intervention(s) to recommend when LBP has not responded to self- or main-stream care?

GB: This is where the ability to provide evidence-informed health care is important. First, the provider must do a comprehensive assessment of the patient's profile that takes into account biological, psychological, and social factors. Then, in collaboration with the patient, he or she should take into account patient preferences and previous treatment experiences. The next step is to design a treatment plan by choosing one, or a combination, of the available effective treatment options.

Psychological and social factors are known to be important in patients' experiences in LBP. What are some of these factors that you have frequently seen, and what have you recommended?

GB: Fear and avoidance of movement is a common phenomenon in LBP patients. We routinely recommend that patients become more active. We assure them that in most cases activity and exercise are beneficial, safe components of their management, and inactivity tends to complicate and prolong LBP. Sometimes patients become depressed as a complication of having pain for a long time. We typically recommend that they see a health care provider who can further assess the depression and recommend any treatment if necessary.

The evidence base on the use of nonpharmacologic approaches to treat/manage LBP appears to be growing. How can such therapies be productively integrated with other LBP therapies?

GB: There is evidence to suggest that, in many cases, multidisciplinary management of LBP is more effective than monotherapeutic approaches.

“Fear and avoidance of movement is a common phenomenon in low-back-pain patients. We routinely recommend that patients become more active.”
— Dr. Bronfort

Currently, our research center at NWHSU is researching the development and testing of methods to help integrative care teams decide on optimal, effective care plans.

How can conventional and CAM providers work together to provide integrative care for LBP?

GB: They can best work together by adopting quality-assurance technology and evidence-based assessment and treatment guidelines. They should also use health information technology, in the form of electronic health records and outcomes management strategies, which ensures effective communication between providers and optimal evidence-informed care.

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Survey Finds That Awareness of CAM Research Varies Among Health Care Providers

In a new survey, about 60 percent of the health-care-provider respondents were aware of the results of one out of two recent major clinical trials on CAM. Only about one-quarter were aware of both trial results. Most respondents were moderately confident in their ability to interpret clinical research findings. The importance that provider groups assigned in their own practices to clinical experience, research results, and patient preferences varied.

The report appears in the April 13 issue of *Archives of Internal Medicine*. Jon Tilburt, M.D., M.P.H., principal investigator, was the first CAM fellow with the NIH Clinical Center's Department of Bioethics and is now at the Mayo Clinic.

The survey focused on the 1,561 respondents' awareness of results from two NCCAM-funded trials, released in 2004 and 2006, that studied either acupuncture or glucosamine/chondroitin for osteoarthritis of the knee. The professional groups surveyed were acupuncturists, internists, naturopaths, and rheumatologists.

Fifty-nine percent of the respondents were aware of at least one of the two trials; 23 percent were aware of both. The acupuncture trial was most familiar to acupuncturists and rheumatologists, the glucosamine/chondroitin trial to internists and rheumatologists.

Those who were aware of the CAM trials were much more likely to be rheumatologists, practicing in an academic or institutional setting, having some research experience, being more confident in interpreting evidence, and/or having more favorable opinions about the role of research in their practice.



“These results suggest that the ultimate clinical impact of clinical research in CAM likely depends on the training, attitudes, and experiences of the clinicians who could translate research results into clinical practice...”
—From the survey report

When it came to interpreting research results, most respondents said they were “moderately confident” in this ability. Few said they were “very confident.”

In their clinical decisionmaking, the respondents rated the importance of three factors as follows:

- All professional groups rated **clinical experience** as “very important” in decisionmaking. CAM providers were more likely than conventional physicians, however, to rate it as “most important.”
- Conventional physicians were much more likely than CAM providers to rate

research results as “very important” or “very useful.”

■ CAM providers were more likely to rank **patient preferences** as “very important,” and conventional physicians to rank them as “least important.”

The authors conclude that CAM research has

the potential to make a difference in both conventional and CAM clinical practices, as long as professionals are aware of that evidence and can apply it in the context of their specific practice. To address “significant barriers,” they recommend concerted efforts to better train all clinicians in interpretation and use of evidence from research studies, and to improve the dissemination of CAM research results.

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Spinal Manipulation for Low-Back Pain



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Low-back pain is a common condition that can be difficult to treat. Spinal manipulation is among the treatment options used by people with low-back pain in attempts to relieve pain and improve functioning. Spinal manipulation is performed

by chiropractors and other health care professionals such as physical therapists, osteopaths, and some conventional medical doctors. This fact sheet from the National Center for Complementary and Alternative Medicine (NCCAM) summarizes the current scientific knowledge about the effects of spinal manipulation on low-back pain.

Spinal Manipulation and Low-Back Pain

Spinal manipulation—sometimes called “spinal manipulative therapy”—is practiced by health care professionals such as chiropractors, physical therapists, osteopaths, and some conventional medical doctors. Practitioners perform spinal manipulation by using their hands or a device to apply a controlled force to a joint of the spine, moving it beyond its passive range of motion. The amount of force applied depends on the form of manipulation used. The goal of the treatment is to relieve pain and improve physical functioning.

In the United States, spinal manipulation is often performed as part of chiropractic care. Chiropractic is a health care approach that focuses on the relationship between the body’s structure—mainly the spine—and its functioning. In chiropractic, spinal manipulation is sometimes called “adjustment.” Back problems are the most common reason people seek chiropractic care.

About Low-Back Pain

Each year, up to one-quarter of U.S. adults experience low-back pain. Most people have significant back pain at least once in their lives; often, the cause is unknown. Back pain varies widely. For many people, it lasts only a few weeks, no matter what treatment is used. But for others, the pain can become chronic and even debilitating. Low-back pain is a challenging condition to diagnose, treat, and study.

What the Science Says

Study Findings to Date

Overall, studies have shown that spinal manipulation can provide mild-to-moderate relief from low-back pain and appears to be as effective as conventional medical treatments. In 2007 guidelines, the American College of Physicians and the American Pain Society include spinal manipulation as one of several treatment options for practitioners to

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consider using when pain does not improve with self-care.

Research is under way to determine whether the effects of spinal manipulation depend on the duration and frequency of treatment. Recent studies have found that spinal manipulation provides relief from low-back pain at least over the short term (i.e., up to 3 months), and that pain-relieving effects may continue for up to 1 year. In one study funded by NCCAM that examines long-term effects in more than 600 people with low-back pain, results to date suggest that chiropractic care involving spinal manipulation is at least as effective as conventional medical care for up to 18 months. However, less than 20 percent of participants in this study were pain free at 18 months, regardless of the type of treatment used.

Challenges Facing Researchers

When considering the evidence on spinal manipulation for low-back pain, it is important to know about the research behind the evidence. Although many clinical trials have been conducted, earlier trials tended to be small and poorly designed, making their findings less reliable. Moreover, studies have differed in focus (the specific type of back pain treated and form of manipulation used) and design (comparisons with other treatments vs. placebos). It can be difficult to clearly interpret findings when what is being measured varies widely from one study to the next. Recent research has begun to address these issues.

Side Effects and Risks

Common Side Effects

Reviews of research studies have concluded that spinal manipulation is relatively safe when performed by a trained and licensed practitioner. The most common side effects are generally minor and include temporary discomfort in the treated area, headache, or tiredness. These effects usually go away in 1 to 2 days.

Serious Complications

The rate of serious complications from spinal manipulation, although not definitely known, appears to be very low overall. A potential complication from low-back manipulation is cauda equina syndrome, a condition in which nerves in the lower part of the spinal cord become compressed, resulting in pain, weakness, and loss of feeling in one or both legs. Other functions—such as bowel or bladder control—may also be affected. Reports indicate that cauda equina syndrome is an extremely rare complication. In people whose pain is caused by a herniated disc, manipulation of the low back also appears to have a very low chance of either causing or worsening cauda equina syndrome.

Tell your health care providers about any complementary and alternative practices you use, including spinal manipulation. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.

For tips about talking with your health care providers about CAM, see NCCAM's Time to Talk campaign at nccam.nih.gov/timetotalk/.

NCCAM Research

Projects supported by NCCAM to study spinal manipulation for low-back pain include research on:

- The optimal number and frequency of treatments, and the duration of care
- Estimated use, costs, and outcomes of chiropractic care for recurrent back pain
- What happens in the body during manipulation of the low back.

For More Information

You can learn more about spinal manipulation for low-back pain from NCCAM by viewing the expanded version of this fact sheet at nccam.nih.gov/health/pain/spinemanipulation.htm or ordering a printed version from the NCCAM Clearinghouse. The expanded fact sheet includes selected references and additional resources.

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Acupuncture for Pain



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Physical pain is a common occurrence for many Americans; in fact, a national survey found that more than one-quarter of U.S. adults had recently experienced some sort of pain lasting more than a day. In addition to conventional treatments, such as over-the-counter and prescription medications, people may try acupuncture in an effort to relieve pain.

About Pain

Pain is a feeling triggered in the nervous system. It may be sharp or dull, off-and-on or steady, localized (such as back pain) or all over (such as muscle aches from the flu). Sometimes, pain alerts us to injuries and illnesses that need attention. Although pain usually goes away once the underlying problem is addressed, it can last for weeks, months, or even years. Chronic pain may be due to an ongoing condition or to abnormal activity in pain-sensing regions of the brain, or the cause may not be known.

Use of Acupuncture for Pain

Acupuncture, among the oldest healing practices in the world, is part of traditional Chinese medicine. A 2007 national survey found that 3.1 million Americans had used acupuncture in the past year. According to the survey, pain including back pain, neck pain, joint pain or stiffness, arthritis, and other musculoskeletal conditions, were among the most common conditions for which adults used complementary and alternative medicine.

What the Science Says About Acupuncture for Pain

Acupuncture has been studied for a wide range of pain conditions, such as

fibromyalgia, headache, low-back pain, menstrual cramps, and osteoarthritis.

Overall, it can be very difficult to compare acupuncture research results from study to study and to draw conclusions from the cumulative body of evidence. This is because studies may use different acupuncture techniques (e.g., electrical vs. manual), controls (comparison groups), and outcome measures. Examples of control groups include study participants who receive no acupuncture, simulated acupuncture (procedures that mimic acupuncture, sometimes also referred to as “placebo” or “sham”), or other treatments (in addition to or in place of acupuncture or simulated acupuncture).

An emerging theme in acupuncture research is the role of the placebo. For example, a 2009 systematic review of research on the pain-relieving effects of acupuncture compared with placebo (simulated) or no acupuncture was inconclusive. The reviewers found a small difference between acupuncture and placebo and a moderate difference between placebo and no acupuncture; the effect of placebo acupuncture varied considerably, and the effect of acupuncture appeared unrelated to the specific kind of placebo procedure used. All of the study participants received standard care, typically consisting of analgesic drugs and physical therapy.

The following sections summarize research on acupuncture for a variety of pain conditions. In general, acupuncture appears to be a promising alternative for some of these pain conditions; however, further research is needed.

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■ **Fibromyalgia**—Evidence on acupuncture for fibromyalgia is mixed. Some reviews of the scientific literature have found the evidence promising. However, another review that focused on the few rigorous randomized controlled trials on acupuncture as an adjunct therapy for fibromyalgia did not find a benefit. Additionally, a 2003 assessment by the Agency for Healthcare Research and Quality concluded that the evidence was insufficient and the beneficial effects of acupuncture for fibromyalgia could not be determined.

■ **Headache/migraine**—Study results on acupuncture for headache are conflicting. Some literature reviews found evidence to support the use of acupuncture for headache, but others noted that most of the studies were of poor quality. A 2008 review of randomized trials on acupuncture highlighted a few well-designed trials whose findings indicate that acupuncture reduces migraine symptoms and is as effective as headache medications. In addition, a 2009 review found that acupuncture may help relieve tension headaches. However, two large trials that looked at acupuncture for migraines found no difference between actual and simulated acupuncture, both of which were equal to conventional care or superior to no treatment.

■ **Low-back pain**—According to clinical practice guidelines issued by the American Pain Society and the American College of Physicians in 2007, acupuncture is one of several CAM therapies physicians should consider when patients with chronic low-back pain do not respond to conventional treatment. In early, small studies, combining actual acupuncture with conventional treatment was more effective than conventional treatment alone for relieving chronic low-back pain; but actual acupuncture was not more effective than simulated acupuncture or conventional treatment. However, a large, rigorously designed clinical trial reported in May 2009 found that actual

acupuncture and simulated acupuncture were equally effective—and both were more effective than conventional treatment—for relieving chronic low-back pain. There is insufficient evidence to draw definite conclusions about the effectiveness of acupuncture for acute low-back pain.

■ **Menstrual cramps**—Two literature reviews have suggested that acupuncture may help with pain from menstrual cramps, but the research is limited.

■ **Osteoarthritis/knee pain**—Acupuncture appears to be effective for osteoarthritis, particularly in the area of knee pain. Recent literature reviews have found that acupuncture provides pain relief and improves function for people with osteoarthritis of the knee. However, authors of a 2007 systematic literature review suggested that although some large, high-quality trials have shown that acupuncture may be effective for osteoarthritis of the knee, differences in the design, size, and protocol of the studies make it hard to draw any definite conclusions from the body of research. These authors concluded that it is too soon to recommend acupuncture as a routine part of care for patients with osteoarthritis.

There is evidence that people's attitudes about acupuncture can affect outcomes. In a 2007 study, researchers analyzed data from four clinical trials of acupuncture for various types of chronic pain. Participants had been asked whether they expected acupuncture to help their pain. In all four trials, those with positive expectations reported significantly greater pain relief.

In addition to studying acupuncture's efficacy, researchers are looking at potential biomechanisms—that is, how acupuncture might work to relieve pain. There are several theories about these biomechanisms (e.g., acupuncture activates opioid systems in the brain that respond to pain); additional research

is still needed to test the theories. Researchers are using neuroimaging techniques such as functional magnetic resonance imaging (fMRI) to look at the effects of acupuncture on various regions of the brain.

Side Effects and Risks

Acupuncture is generally considered safe when performed by an experienced practitioner using sterile needles. Relatively few complications from acupuncture have been reported. Serious adverse events related to acupuncture are rare, but include infections and punctured organs. Additionally, there are fewer adverse effects associated with acupuncture than with many standard drug treatments (such as anti-inflammatory medication and steroid injections) used to manage painful musculoskeletal conditions like fibromyalgia, osteoarthritis, and tennis elbow.

For More Information

You can learn more about acupuncture for pain from NCCAM by viewing the expanded version of this fact sheet at nccam.nih.gov/health/acupuncture/acupuncture-for-pain.htm or ordering a printed version from the NCCAM Clearinghouse. The expanded fact sheet includes selected references and additional resources.

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First Straus Lecture: Acupuncture and Medical Paradigms

The patient, who was conscious and on little medication, groaned loudly—but not because a surgeon was operating on the front of her neck.

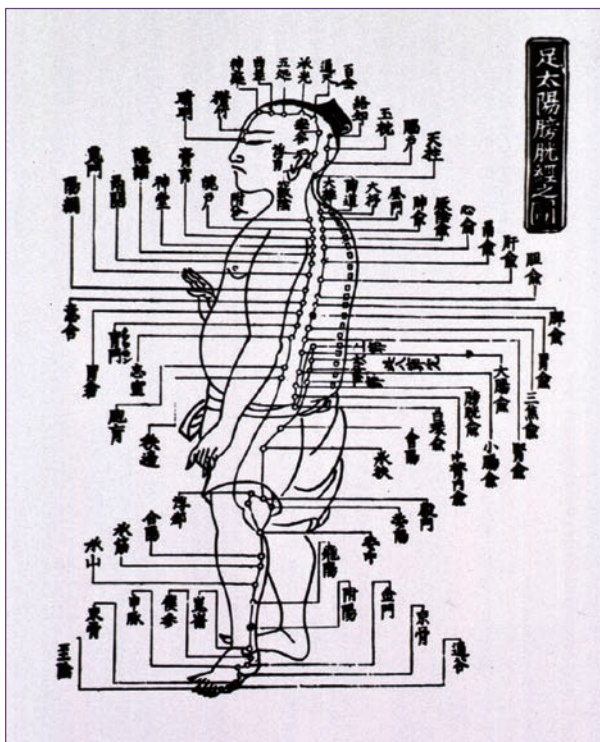
She had been immobilized in a half-upright position for quite awhile, and it was getting uncomfortable, she said.

As for having her thyroid resected, “I can tell that I’m being cut, but there isn’t any pain. I just feel something is going on.”

With the help of four acupuncture needles bolstered by a low electrical current; small doses of several conventional drugs; and coaching in some mind-body techniques, she was conscious during a thyroid operation—without general anesthesia or, later on, postoperative pain drugs.

Her case—at Hunan Medical University, in Changsha, China—helped illustrate the first Stephen E. Straus Distinguished Lecture in the Science of Complementary and Alternative Medicine, given at NIH on March 10, 2009. Sherwin Nuland, M.D., spoke on “Chinese Medicine, Western Science, and Acupuncture.”

Dr. Nuland is a clinical professor of surgery at Yale School of Medicine, where he also teaches bioethics and medical history. He has written over one dozen books, including *How We Die*, which won the National Book Award; *The Uncertain Art: Thoughts on a Life in Medicine*; and his 2009 book, *The Soul of Medicine*. His writing has also appeared in *Time*, *The New Yorker*, and many other publications.



An illustration of acupuncture points from an early Chinese medical textbook

Dr. Nuland took the NIH audience on a journey to cities, towns, operating rooms, and clinics in China, where, in the late 1980s to mid-1990s, he witnessed a number of procedures and met many practitioners of traditional Chinese medicine as director and chairman of the Yale-China Medical Association.

“Sherwin Nuland is one of the early investigators who observed demonstrations of pain relief from acupuncture, as had been reported by other Western observers—including, famously, columnist James Reston of *The New York Times*,” Jack Killen, M.D., Deputy Director of NCCAM, told *Complementary and Alternative Medicine*. “Dr. Nuland and others laid the foundation for today’s efforts to understand acupuncture in scientific terms and pursue effective and safe applications.”

Observing such cases and talking to medical colleagues in China led Dr. Nuland to think about what could explain these effects of acupuncture, and whether the effects could be separated from beliefs underlying the practice of traditional Chinese medicine (for example, in qi, a vital energy or life force, and in yin-yang theory).

In the case described earlier, the 34-year-old factory worker had been diagnosed with thyroid cysts. After her admission for surgery, Dr. Nuland said, she was coached in some techniques for relaxation, abdominal breathing, and “confidence.” Shortly before surgery her anesthesiologist chose four acupuncture “points” on her body for needle insertion. The needles were connected to a small battery that provided a low-frequency, low-intensity current.

Throughout the operation, by observing and talking to his patient, he would ascertain how his analgesic measures were working. The medications she received were 40 milligrams (mg) of phenobarbital, 40 mg of meperidine, and 4 mg of droperidol.

Dr. Nuland was startled at the outset as the surgeon gripped the patient’s skin tightly in “the most brutal clamp I know of in surgery”—the Coker clamp—and she did not react. Through the rest of the operation, she appeared relaxed, even bored, with an occasional mild grimace. Besides the sensation of “someone working,” she reported two instances of brief, intense heat, when muscles and ligaments were cut; some minor pain, when tissue was cut away; and a few

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pinprick-like sensations, when stitches were inserted.

Immediately afterward, this patient was smiling and conversing with the staff. When Dr. Nuland saw her 2 days later, she said that the surgery had been “a good experience” and that she felt fine and had not needed any postoperative pain medication (which he verified in her chart).

Dr. Nuland said that her surgeon, who was Western trained, told him, “[Acupuncture] is not really anesthesia... it doesn’t really relieve pain [but] increases the patient’s ability to tolerate the pain,” although not all kinds of pain. Her anesthesiologist said that surgical acupuncture analgesia succeeds about 80 percent of the time; it works better for certain kinds of surgical pain (such as surgery to the head—including the brain—or neck) than others (abdominal surgery, for example).

How does one explain these effects, Dr. Nuland asked? He had carefully considered the possibilities of hoax, autosuggestion, or placebo effect, but was convinced otherwise. Discussions with his colleagues practicing in China



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Sherwin B. Nuland, M.D.

yielded many insights and convinced him that acupuncture should be further investigated scientifically.

Since that time, various “Western” explanations have been proposed and investigated, such as the gate control theory of pain—in this case, that electricity or a multitude of small pain stimuli from the needles overloads the nervous system to a degree that the larger bulk of surgical pain cannot get to the brain and thus enter awareness.

More recently, evidence has emerged indicating that acupuncture is effective in raising the threshold of pain because it increases production of endorphins. The effects of endorphins can be blocked by naloxone, a narcotic-antagonist drug. Endorphins become markedly elevated in the brain and

blood in response to acupuncture, according to research carried out in both China and the West.

“All this provides a reasonable explanation for the effectiveness of surgical acupuncture,” Dr. Nuland said in closing. “But ‘reasonable’ does not mean ‘proven’ or ‘well documented’ enough to satisfy the rigorous criteria of experimental science.

“Traditional Chinese medicine is a vast collection of time-honored theories, many of which have also been honored by a considerable degree of clinical success,” he continued. “Any experienced clinician might tell you that there are phenomena that cannot be fully explained by today’s biomedical science...I find myself agreeing with [others] who have said that further study is indeed needed.”

An archived copy of Dr. Nuland’s lecture may be viewed on the Internet at nccam.nih.gov/news/events/lectures/straus2009mar.htm.

For more on this topic, see NCCAM’s backgrounder, *Traditional Chinese Medicine: An Introduction* at nccam.nih.gov/health/whatiscam/chinesemed.htm.

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What are some innovations in treatment and management “coming down the pike” that you think might make a real difference in LBP, or pain in general?

GB: There is emerging research evidence that chronic back pain can be complicated by the development of abnormal processing in central nervous system pain centers. In effect, they become “hypersensitized.” This perpetuates chronicity. It is a phenomenon that has been demonstrated in a number of other chronic-pain

conditions. Finding physical and psychological treatments that can specifically target this malfunction may have a big impact.

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box below. LBP is often classified either as acute (pain that lasts up to 4 weeks); subacute (pain lasting from 4 to 12 weeks); or chronic (pain lasting for 3 months or longer). Only a small percentage of acute cases of LBP—2 to 7 percent, according to one guideline—become chronic. However, this condition can cause substantial disability and accounts for the majority of LBP-associated costs.

What Is Nonspecific Low-Back Pain?

Nonspecific low-back pain is pain occurring primarily in the back with no signs of a serious underlying condition, spinal stenosis or radiculopathy, or another specific spinal cause. Degenerative changes on lumbar imaging correlate poorly with symptoms and are usually considered nonspecific.

Condensed from Chou R, Qaseem A, Snow V, et al., 2007.

Seeking Options in CAM

“Low-back pain is one of our society’s most common, burdensome health problems,” says Josephine P. Briggs, M.D., Director of NCCAM. “The currently available treatments have limitations. Many patients turn to CAM with the hope of decreasing pain, improving function and quality-of-life, preventing recurrence and chronicity, or avoiding side effects of other treatments.”

According to the 2007 National Health Interview Survey, back pain is the most common condition for which American adults use CAM. Data suggest that the CAM therapies most frequently used for LBP are chiropractic/manipulation, massage, and acupuncture. Other CAM approaches include yoga, herbal and other dietary supplements, devices, and lifestyle products.

Evaluating Treatment Options

Identifying optimal treatment approaches for LBP can be difficult for both patients and clinicians. A thorough patient assessment is the first step for a clinician who may be considering recommending CAM therapies. Clinical practice guidelines stress the importance of ruling out serious underlying conditions and evaluating a patient’s psychosocial factors and emotional distress when doing an assessment of LBP.

Among recent recommendations on LBP are joint clinical guidelines from the American College of Physicians and the American Pain Society (ACP/APS). Released in 2007, the statement’s seven major recommendations to clinicians include:

- Conducting a focused history and physical examination to help place patients into one of three categories: nonspecific LBP, back pain potentially associated with radiculopathy or spinal stenosis, or back pain potentially from another specific spinal cause
- Providing patients with evidence-based information on the expected course and on effective self-care options, and advising them to remain active
- Considering use of medications with proven benefits (first-line options are acetaminophen or NSAIDs)
- Considering nonpharmacologic therapy that has proven benefits for patients whose LBP does not improve with self-care alone.

The tables on page 11 list the ACP/APS guidelines’ levels of evidence and net benefit for nonpharmacologic



Beth Tedesco, D.C., performs spinal manipulation (known in chiropractic as adjustment)

treatments for acute and chronic/subacute LBP.

Findings on CAM from Systematic Reviews

Systematic reviews on CAM for LBP may be divided into two categories:

Cochrane Systematic Reviews. The Cochrane Collaboration

is an international nonprofit organization of health care professionals. Its authors use a systematic process to analyze the results of clinical trials and other sources to explore the evidence for and against the effectiveness and appropriateness of health care treatments. Topics pertaining to CAM for LBP include:

- Massage
- Herbal medicine
- Spinal manipulative therapy
- Acupuncture
- Chiropractic interventions
- Behavioral treatments (including some mind-body therapies).

Other Systematic Reviews. The CAM on PubMed database, a service of NCCAM and the National Library of Medicine, provides abstracts of systematic reviews published in peer-reviewed medical and scientific journals. Examples of relevant review topics include:

- Spinal manipulation and mobilization
- Osteopathic manipulative treatment
- Acupuncture
- Herbal and other dietary supplements
- Willow bark
- Devil’s claw
- Spa therapy and balneotherapy (treatment based on bathing in water).

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“There is much more to learn about the effectiveness and safety of CAM therapies for chronic LBP and other pain conditions.” – Josephine P. Briggs, M.D.

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Two of the themes that are consistent throughout the body of systematic reviews on CAM for LBP are that the evidence evaluated is limited—for example, in its quantity or quality—and that more high-quality research is needed.

Specific areas for future research in CAM for LBP include the cost-effectiveness of CAM therapies; head-to-head comparisons of therapies and studies of the effectiveness of CAM therapies versus usual care; and the optimal form, duration, and frequency for treatments.

Additional Clinical Considerations: CAM for LBP

When a health care provider considers treatment options for a patient with LBP, other factors play a part as well, such as clinical experience and the patient's condition, preferences, and expectations. Consider the following additional tips on CAM:

- Ask your patients about CAM. Research has found that most patients do not disclose CAM use to their health care providers. Let them know they can discuss any therapy with you that they are interested in or are using.
- Evidence-based information for you and your patient is available from NCCAM as well as other resources listed at right. Visit the NCCAM Web site for additional links.
- When making referrals to other practitioners, find out about their training, and their licensing or certification, if applicable. Ask specifically about the nature and length of their experience in treating LBP.
- Health care providers of all types may be involved in the care of patients with LBP. Open and clear communication between providers helps ensure coordinated and safe care.

“There is much more to learn about the effectiveness and safety of CAM therapies for chronic LBP and other chronic pain conditions,” says Dr. Briggs.

“Building a better and clearer evidence base in these areas, and sharing reliable information, are priorities for NCCAM.”

For More Information

National Center for Complementary and Alternative Medicine

■ The NCCAM Clearinghouse provides information on CAM and NCCAM, including medical literature searches and publications such as *Are You Considering CAM?*, *Selecting a CAM Practitioner*, *Spinal Manipulation for Low-Back Pain*, *Acupuncture, Yoga, Massage Therapy*, and *Using Dietary Supplements Wisely*.

■ NCCAM's “Time To Talk” educational campaign offers free materials to encourage open discussion of CAM between patients and providers, at nccam.nih.gov/timetotalk/.

■ An evidence-based report funded by NCCAM, *Complementary and Alternative Medicine in Back Pain Utilization*, was published by the Agency for Healthcare Research and Quality and is available at www.ahrq.gov/downloads/pub/evidence/pdf/backpaincam/backcam.pdf.

■ Toll-free in the U.S.: 1-888-644-6226

■ TTY (for deaf and hard-of-hearing callers): 1-866-464-3615

■ Web site: nccam.nih.gov

■ E-mail: info@nccam.nih.gov

The Cochrane Collaboration

■ Abstracts of Cochrane reviews are available free of charge. Full reviews are available through many hospital and medical libraries and by pay-per-view or subscription.

■ Web site: www.cochrane.org

PubMed®

■ Web site: www.ncbi.nlm.nih.gov/sites/entrez

CAM on PubMed

■ Web site: nccam.nih.gov/research/camonpubmed

MedlinePlus

■ MedlinePlus, a Web-based resource from the National Library of Medicine, offers many types of health and disease

information produced by Federal agencies (including NIH institutes and centers) and other organizations.

■ Web site: medlineplus.gov

National Guideline Clearinghouse (NGC)

■ NGC is a database of summaries of evidence-based clinical practice guidelines, with links to full texts when available.

NGC is part of the Agency for Healthcare Research and Quality.

■ Web site: www.guideline.gov

To view a selection of recent literature citations from PubMed on LBP, and on NCCAM-funded research results, go to nccam.nih.gov/news/newsletter/2009_may/backpain.htm.

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American College of Physicians/American Pain Society Guidelines: Levels of Evidence and Net Benefit for Noninvasive Interventions in Low-Back Pain*

Table 1. Acute Low-Back Pain

Intervention	Level of Evidence	Net Benefit
Acetaminophen	Good	Moderate
Nonsteroidal anti-inflammatory drugs	Good	Moderate
Skeletal muscle relaxants	Good	Moderate
Superficial heat	Good	Moderate
Advice to remain active	Good	Small (no significant harms)
Benzodiazepines	Fair	Moderate
Opioids and tramadol	Fair	Moderate
Self-care education books	Fair	Small (no significant harms)
Herbal therapies	Fair (devil's claw and white willow bark) to poor (cayenne)	Moderate (devil's claw and white willow bark), unable to estimate (cayenne)
Spinal manipulation	Fair	Small to moderate
Advice to rest in bed	Good	No benefit
Exercise therapy	Good	No benefit
Systemic corticosteroids	Fair	No benefit
Aspirin	Poor	Unable to estimate
Acupuncture	Poor	Unable to estimate
Back schools	Poor	Unable to estimate
Interferential therapy	Poor	Unable to estimate
Low-level laser	Poor	Unable to estimate
Lumbar supports	Poor	Unable to estimate
Massage	Poor	Unable to estimate
Modified work	Poor	Unable to estimate
Shortwave diathermy	Poor	Unable to estimate
Transcutaneous electrical nerve stimulation	Poor	Unable to estimate
Superficial cold	Poor	Unable to estimate

Table 2. Chronic or Subacute Low-Back Pain

Intervention	Level of Evidence	Net Benefit
Acetaminophen	Fair	Small (no significant harms)
Acupuncture	Fair (some inconsistency vs. sham acupuncture)	Moderate
Psychological therapy (cognitive-behavioral therapy or progressive relaxation)	Good for cognitive-behavioral, fair for progressive relaxation	Moderate (cognitive-behavioral) to substantial (progressive relaxation)
Exercise therapy	Good	Moderate
Interdisciplinary rehabilitation	Good	Moderate
Nonsteroidal anti-inflammatory drugs	Good	Moderate
Spinal manipulation	Good	Moderate
Opioids and tramadol	Fair (primarily indirect evidence from trials of patients with other pain conditions)	Moderate
Brief individualized educational interventions	Fair	Moderate
Benzodiazepines	Fair	Moderate
Massage	Fair	Moderate
Yoga	Fair (for Viniyoga) to poor (for Hatha yoga)	Moderate (Viniyoga), unable to estimate (Hatha yoga)
Tricyclic antidepressants	Good	Small to moderate
Antiepileptic drugs	Fair (for gabapentin) to poor (for topiramate)	Small (gabapentin in patients with radiculopathy), unable to estimate (topiramate)
Back schools	Fair (some inconsistency)	Small
Firm mattresses	Fair	No benefit or harm
Traction	Fair	No benefit (continuous or intermittent traction), small to moderate (autotraction for sciatica)
Aspirin	Poor	Unable to estimate
Biofeedback	Poor	Unable to estimate
Interferential therapy	Poor	Unable to estimate
Low-level laser	Poor	Unable to estimate
Lumbar supports	Poor	Unable to estimate
Shortwave diathermy	Poor	Unable to estimate
Skeletal muscle relaxants	Poor	Unable to estimate
Transcutaneous electrical nerve stimulation	Poor	Unable to estimate
Ultrasonography	Poor	Unable to estimate

Adapted with permission from Chou R, Qaseem A, Snow V, et al. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Annals of Internal Medicine*. 2007;147(7):479-W-119.

* Additional information on the levels of evidence is available in the full practice guideline.

Complementary and Alternative Medicine: Focus on Research and Care

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IOM Summit Explores Integrative Medicine

Over 600 attendees with an interest in integrative health care and the future of the Nation's health convened in Washington, D.C., on February 25-27 for a "Summit on Integrative Medicine and the Health of the Public," sponsored by the Institute of Medicine with support from The Bravewell Collaborative.

Ralph Snyderman, M.D., Duke University School of Medicine, chaired the summit. Dr. Snyderman lectured on integrative medicine in 2005 as part of NCCAM's Distinguished Lectures in the Science of Complementary and Alternative Medicine. A number of NCCAM's current and former grant recipients also served as speakers and panelists.

Josephine P. Briggs, M.D. (pictured at right), Director of NCCAM, spoke on "The Science: CAM Modalities."

"NCCAM's mission is building the evidence base on CAM therapies, which can be part of integrative medicine," Dr. Briggs said. She added, "We follow three NIH core principles in overseeing our investment in CAM research—rigorous peer review, commitment to investigator-initiated science, and partnerships with other NIH components, other Federal entities, and the private sector."

Dr. Briggs noted that the major types of studies in which NCCAM will invest are basic science (which asks, "How does [a therapy] work?"); translational research ("Can it be studied in people?"); efficacy studies ("What are the specific effects?"); and effectiveness research ("Is it a good treatment?"). She gave examples of NCCAM-funded studies that have had an impact on areas ranging from the conduct of research on CAM, to



Josephine P. Briggs, M.D.

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patterns of consumer use, to clinical practice.

The Institute of Medicine's official report on the summit will be released November 4, 2009. To view Webcasts of the presentations, go to www.imsummitwebcast.org. Dr. Snyderman's 2005 NCCAM lecture, "Integrative Medicine," may be viewed at nccam.nih.gov/training/videolectures/integrative.htm.

