



From the Director

Dear Colleagues:

As year one of the NIH's Center of Excellence in Pain Education project draws to a close, we write to update you on the progress and future plans of the UCSF CoEPE.

In this issue of the UCSF CoEPE Pain Education Newsletter, we feature a description of the 2013 UCSF Pain Summit. Held on May 16, the day included expert speakers from UCSF and the University of Minnesota – Children's Hospital, as well as interactive break-out sessions on topics such as adult and pediatric acupuncture, manual medicine, and interventional pain management approaches.

As a complement, we include an in depth article by UCSF Osher Center Drs. Barrows, Mehling and Reddy, providing an overview of evidence – based integrative pain management techniques shown to be effective in the management of both acute and chronic pain.

Finally, the UCSF CoEPE has created two interactive case based educational modules that will lead providers at various learner levels through the appropriate steps in the management of acute to chronic postoperative pain. Additionally, the second case module is devoted to the interdisciplinary assessment and management of women suffering from chronic pelvic pain. Together, these modules are the beginning of a developing case series to be inserted in the undergraduate and post-graduate UCSF curricula. In the future, such cases based modules will also be available to all UCSF health care providers by a dedicated website, and nationally through a special NIH CoEPE web portal. During year two of the project, additional cases are to be developed and piloted in simulated interprofessional clinical scenarios.

Thank you for your interest in this issue. Should you have any comments, questions, or concerns, please contact us at ucsfcpe@anesthesia.ucsf.edu.

Mark Schumacher, PhD, MD



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The 2013 UCSF Pain Summit

In 2011, UC San Francisco held its first Pain Summit – an interprofessional meeting aimed at providing content, reviewing clinical pain cases to improve quality and safety, discussing critical aspects of pain care and identifying gaps in providing optimal pain care. The summit was a tremendous success and with the naming of UCSF as one of 12 NIH Centers of Excellence in Pain Education (CoEPE), the university now has more resources to continue the Pain Summits on an annual basis.

This year's summit, held May 16, 2013, used a rich array of speakers in the morning and breakout workshops in the afternoon to explore multidisciplinary approaches to treating both acute and chronic pain. The goal is to improve pain management among all UCSF clinicians.

With Principal Investigator **Mark Schumacher, MD**, serving as emcee, the day began with **Sheila Antrum**, chief nursing and patient care services officer at UCSF Medical Center talking about the need to create systems that ensure best practices make their way to all clinicians who work with patients, because patients have very clear expectations about having their pain managed.

Chief Medical Officer **Josh Adler, MD**, was next. He spoke on a number of different topics, and issued a challenge to those present: based on patient surveys that put UCSF in the 50th percentile in terms of managing pain, he encouraged providers in the audience to use "multimodal analgesia" to improve those scores, while also improving patient safety in the administration of pain treatments.

Next, Schumacher explained that the purpose of the CoEPE and the day's summit was to not only improve patient safety but to also contribute to meeting a national need for clinicians to receive more and better pain education.

The UCSF CoEPE will create a roadmap for improving pain education across all four schools at UCSF; explore the establishment of pain assessment and treatment competencies; weave expanding knowledge into educational programs that emphasize case studies, rather than lectures; and create structured educational seminars or simulated sessions that are intended to develop pain management competencies. The group will also create a bi-annual newsletter and web site to keep the entire school aware of the group's work and of advances in pain management.

From there, a series of speakers took on a wide range of topics:

■ **Sheri VanOsdol** from the School of Pharmacy spoke about methods for making patient-controlled analgesia (PCA) safer by increasing the PCA lock-out interval. She then spoke about the need to look beyond opioids.

■ **Adam Cooper**, a clinical nurse specialist at UCSF Medical Center spoke about progress that had been made over the past two years on safely keeping patients' pain under control, in part by refining tools that patients use to self-report their pain levels.

■ **Mark Schumacher** retook the podium to discuss multimodal analgesia, with a focus on the growing number of non-opioid strategies.

■ **Adimika Meadows-Arthur**, administrative director of the pain service line discussed the challenges involved in trying to integrate and streamline pain services across UCSF in a way that delivers higher quality care for lower costs.

■ **Stefan Friedrichsdorf, MD** – the day's primary guest and director of the Department of Pain Medicine, Palliative Care and Integrative Medicine at Children's Hospitals and Clinics of Minnesota – gave an entertaining presentation about some of the latest findings on pain pharmacology and the neurological pathways of pain.

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UCSF Osher Center: Integrative Medicine Pain Services

The UCSF Osher Center for Integrative Medicine provides complementary non-pharmacological pain services that can be integrated with pharmacological and behavioral medicine. Integrative Medicine has much to contribute to the management of pain, whether acute or chronic, inpatient or outpatient. An increasing number of medical practitioners and hospitals are turning to Integrative (or “Complementary”) Medicine modalities for assistance in managing pain conditions. There are at least three major reasons for this trend: 1) The increasing recognition that integrative/complementary modalities can help meet the longstanding clinical challenge of successfully managing pain, 2) The recent widespread effort to find alternatives and adjuncts to opioid medications, and 3) The growing mandate to treat pain more cost-effectively

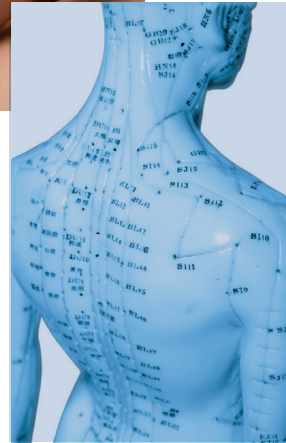
Within Integrative Medicine there are three clinical domains that are especially good at treating pain and have substantial scientific evidence supporting their use: 1) Acupuncture, 2) Mind-Body Medicine, and 3) Manual Medicine



ACUPUNCTURE

The National Institutes of Health issued a Consensus Statement on Acupuncture, supporting the use of acupuncture, particularly for the treatment of pain.¹ Acupuncture is increasingly used in the United States, with approximately 3 million people reporting seeing an acupuncturist in 2007 alone, up from approximately 1 million in 2002.² Although acupuncture works effectively for many conditions, it is most commonly used for pain, both acute and chronic. A Cochrane review from 2010 showed statistically significant benefits from acupuncture on symptoms of osteoarthritis,³ and a recent meta-analysis in the *Archives of Internal Medicine* found patients who received acupuncture had significantly less pain than sham controls for osteoarthritis, chronic headache, back and neck pain.⁴ Acupuncture has been well studied in post-operative pain management as well, showing improved pain control and decreased opiate consumption.⁵

From a Western perspective acupuncture is thought to exert its health effects by stimulating the central nervous system to release neurotransmitters and hormones that can reduce pain, activate the immune system and affect other body functions. The practice of acupuncture involves the insertion of ultra-thin needles through the skin at specific points throughout the body. Acupuncture is part of a larger system of Chinese medicine, and has been in practice for thousands of years. From the traditional Chinese perspective, the acupuncturist utilizes proper needle placement to balance the flow of chi, or qi (often translated as ‘vital energy’ or ‘life energy’), in the human body. Obstructions and alterations in the flow of chi cause disease and pain. Acupuncture is quite safe, as a study of German physicians with over 95,000



patients and over 700,000 treatments reported only 7 major complications: exacerbation of depression, acute hypertensive crisis, vasovagal reaction leading to loss of consciousness, asthma attack with hypertension and chest pain, and 2 pneumothoraces.⁶

In addition to having an excellent safety profile, reducing opiate use and improving pain control, acupuncture has the added benefit of cost-effectiveness. Due to the relatively low expense of the equipment used and heavy emphasis on the patient encounter, economic analyses have found adding an acupuncturist to

traditional western care is cost effective for low back pain,⁷ headaches⁸ and osteoarthritis.⁹

The World Health Organization (WHO) document entitled *Acupuncture: Review and Analysis of Reports on Controlled Clinical Trials* in 2002 states: “The effectiveness of acupuncture analgesia has already been established in controlled clinical studies. ...Acupuncture analgesia works better than a placebo for most kinds of pain, and its effective rate in the treatment of chronic pain is comparable with that of morphine. ... Because of the side-effects of long-term drug therapy for pain and the risks of dependence, acupuncture analgesia can be regarded as the method of choice for treating many chronically painful conditions.”

MIND-BODY MEDICINE

Mind-body medicine has been defined as the field of medicine that focuses on the interactions among the brain, mind, body, and behavior, and on the powerful ways in which emotional, mental, social, spiritual, and behavioral factors can directly affect health.¹⁰ Mind-body therapies include meditation, biofeedback, hypnosis, guided imagery, relaxation techniques, yoga, tai chi, qigong and others.

These therapies are popular and have a very high rate of perceived helpfulness.¹¹ Furthermore there is substantial research evidence of the effectiveness of mind-body therapies in the treatment of pain.

Mindfulness Meditation

Mindfulness is the ancient attentional practice of maintaining moment-to-moment awareness of physical sensations, emotions, thoughts and environment. Fourteen studies, including over 900 patients, have been conducted using mindfulness-based interventions in a variety of chronic pain populations.^{12,13,14,15,16} All studies showed significant improvement in mental health parameters, such as quality of life, acceptance, pain tolerance, and mood. Twelve of these studies (both controlled and uncontrolled) showed pain reduction. Two studies of experimentally induced pain concluded that either long-term mindfulness practice or even just a brief mindfulness intervention can reduce pain. Importantly two RCT's show cost benefit with mindfulness interventions.

Biofeedback

Biofeedback is a behavioral therapy method that teaches a patient to gain greater awareness and control over physiologic functions, including some not normally under conscious control. This is achieved by using technology that presents to the patient in visual or auditory form the level of activity of a physiologic parameter, such as muscle tension, skin temperature, sweat gland activity, respiratory muscle activity, PCO₂, heart rate variability, or brain wave pattern. Biofeedback has been extensively studied in prevention of recurrent migraine and tension headaches, with more than 50 studies including many randomized controlled trials.^{17,18,19,20} Several meta-analyses concur there is a significant reduction (30–55%) in headache frequency with biofeedback and other behavioral interventions. The American Academy of Neurology practice guidelines have stated that there is grade “A” evidence for the use of biofeedback for prevention of migraine. Biofeedback compares favorably with pharmaceutical treatments in several studies.

Guided Imagery

Guided imagery uses the imaginative capacity of the mind to affect one's physical, emotional or spiritual state. A 2012 review of fifteen randomized controlled trials on guided imagery for non-musculoskeletal pain concluded that the evidence of benefit is encouraging

as did a rigorous systematic review found of nine randomized controlled trials on musculoskeletal pain.^{21,22} Although with borderline statistical significance, one study showed reduction in hospital length of stay.

Hypnosis

Hypnosis is a procedure that induces an altered state of consciousness in which the patient's mind is more accepting of suggestion. There are at least 40 controlled studies on the use of hypnosis for treating acute pain in adult and pediatric populations.^{23,24,25} All but 3 studies show superiority of hypnosis over a control condition (usual care, no treatment, or attentional control). Hypnosis has been shown effective for periprocedural and perioperative pain in patients undergoing breast lumpectomy, excisional and core breast biopsy, bone marrow aspiration, pectus excavatum repair (Nuss procedure), percutaneous transluminal coronary angioplasty and other percutaneous vascular and renal procedures, burn wound care, dental procedures, and plastic surgery. Many studies also report less procedure-related anxiety and lower analgesic medication requirement. For chronic pain, individual studies of hypnosis have shown efficacy for headache, orofacial pain, dyspepsia, low back pain, vulvodynia, pain from sickle cell disease, fibromyalgia, multiple sclerosis, and spinal cord injury.

Other Mind-Body Therapies

Tai Chi research has shown efficacy for fall prevention in elders, gait and balance

improvement in Parkinson's disease, and cardiac rehabilitation in heart failure and coronary artery disease patients. Yoga has shown efficacy for low back pain and many physical and psychological symptoms of cancer.

MANUAL MEDICINE

Manual Medicine is the field of medical therapies whereby the practitioner uses their hands to affect an outcome for the patient. Massage and spinal manipulation are two forms of manual medicine useful in pain management.

Massage

Massage is ancient. Over 2000 years ago, Hippocrates stated: ““The physician must be experienced in many things, but assuredly in massaging”. Massage uses a wide array of techniques; most popular are “Swedish” massage and acupressure. A 2002 telephone survey in 2055 adults found that in the prior year 37% of people with back or neck pain saw a conventional provider and 54% used complementary therapies.²⁶ 20% saw a chiropractor and 14% a massage provider. 27% found their conventional care to be very helpful for their pain, but 65% found massage and 61% found chiropractic care very helpful. A Cochrane review saw moderate evidence for massage helping low back pain when compared with sham.²⁷ A massage and acupuncture study in patients hospitalized for cancer-related surgery at the UCSF Mount Zion Cancer Center for at least three days found improvements for pain and depression over usual care,²⁸ and another multicenter study in cancer



patients showed improvements in pain compared to light touch²⁹ How does it work? Massage appears to have its largest effect on trait anxiety and depression, possibly mediating its effect on pain.³⁰ But massage also has a direct impact on the cellular level by increasing mitochondrial biogenesis and reducing cellular stress after muscle injury, as shown by muscle biopsies.³¹

Spinal Manipulation

Spinal manipulation is a quick, low-amplitude manual thrust technique applied to a specific spinal joint within its passive range of movement to treat a reversible, functional movement restriction. MRI studies have demonstrated that this involves a measurable gapping of facet joints (in humans) and results in decreased afferent nerve activity (in animal models). Systematic reviews are as numerous as randomized controlled trials and have generally confirmed equal efficacy compared to conventional therapies. A large study in the British National Health Service found spinal manipulation effective for reducing pain, improving function and reducing cost compared to conventional primary care.³² US national guidelines and most other national guidelines recommend it for patients with acute and chronic LBP if they do not improve with self-care options.³³ A subgroup of low back pain patients with pain less than 16 days, no sciatica, low fear-avoidance beliefs, segmental joint hypomobility and at least one healthy hip, profit most from spinal manipulation (number needed to treat 1.9 for 4-week outcome of pain).³⁴ A systematic review of 6 studies concluded that spinal manipulation is cost-effective for neck and low back pain (alone or in combination) compared to primary care, exercise and physiotherapy.³⁵ High-velocity manipulations with rotation at the upper segments of the cervical spine (occiput to C3), however, carry a very small but undeniable stroke risk from vertebral artery dissection.³⁶ Nonetheless these manipulations can be substituted with gentler manual techniques presumably with negligible or no risk.

In summary, Integrative/Complementary modalities such as acupuncture, mind-body medicine and manual medicine help us meet the challenge of managing pain, offer potent and diverse non-pharmacologic options and help to contain costs.

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UCSF

The 2013 UCSF Pain Summit

Continued from inside

■ **John Maa, MD**, director of the Surgical Hospitalist Program at UCSF Medical Center presented a case study of an adult with severe abdominal pain, who is also at risk for opioid abuse.

■ **Diana Coffa, MD**, from San Francisco General Hospital detailed the risk factors for opioid abuse, including making clinicians aware of some myths that still exist about who is truly at risk.

■ **Stefan Friedrichsdorf** returned to discuss integrated pain management in children, with an emphasis on understanding the transition from acute to chronic pain. He then concluded the morning by co-moderating a panel of clinicians from UCSF Benioff Children's Hospital – along with **Karen Sun**, chief of the Division of Pediatric Hospital Medicine at UCSF Benioff – that looked at what is working well at UCSF and where improvements need to be made. The panel included:

David Becker, MD, a pediatric integrative medicine physician at the Osher Center for Integrative Medicine
Penny Ngo, PharmD, of the Integrated Pediatric Pain and Palliative Care Service

Lisa Gray, Child Life Specialist
 Nurse **Dawn Pizzini**

Maurice Zwass, chief of pediatric anesthesia

Adimika Meadows Arthur, administrative director of the UCSF Pain Service Line

■ **Sarah Palyo, PhD**, and her fellow pain management team members from the SF VA Medical Center, presented their model of an intensive pain rehabilitation program.

Alain Lartigue, MD, Pain Clinic Director

Kathryn Schopmeyer, PT, DPT, Pain Clinic Physical Therapist

Kathleen Campbell, RN, Pain Clinic Care Coordinator

Tracy Lin, PharmD, Pain Clinic Pharmacist

After a lunch break, the summit continued by offering a series of focused, small group breakout sessions that highlighted the various options available for multimodal analgesia, from massage, acupuncture and acupressure to interventional and pharmacological solutions.

Schumacher considered the day an unqualified success, especially based on a pre- and post-test, that showed most attendees had filled in important gaps in their understanding of pain assessment and management.

“With the launch of the pain medicine website, a video copy of the Pain Summit 2013 will soon be available to those unable to attend,” he says.