

Translating Fundamental Science of Acupuncture into Clinical Practice for Cancer Symptom Management, Pain, and Substance Abuse: At the NIH Campus, Bethesda, MD

The National Cancer Institute's Office of Cancer Complementary and Alternative Medicine and NCCIH cosponsored a workshop, "Translating Fundamental Science of Acupuncture into Clinical Practice for Cancer Symptom Management, Pain, and Substance Abuse" on February 11-12, 2019, on the NIH campus in Bethesda, MD.

The 2-day event included discussions on neural and extra-neural mechanisms as well as non-specific effects of acupuncture. There were also presentations on overcoming barriers to clinical research with acupuncture. Attendees included acupuncture researchers and NIH staff.

The event opened with a short introduction from Dr. Helene Langevin, MD, director of NIH's National Center for Complementary and Integrative Health (NCCIH). Dr. Langevin, who had previous appointments at both the University of Vermont and Harvard University, oversees the NCCIH's annual budget of \$142 million, much of which funds acupuncture research. Her own well-known research includes studies on connective tissue in chronic musculoskeletal pain and the mechanisms of acupuncture, manual and movement-based therapies.

The first session focused on **specific effects of the interventions, neural mechanisms and pathways**. Presenters

(L-R) Richard Niemtzw, Jennifer Stone, and Jun Mao
Photo courtesy Korina St. John



included Dr. Qiufu Ma, Dana Farber Cancer Institute, Harvard School of Medicine, who discussed his research on mapping sensory circuits and uncovering distinct sensory pathways that transmit and gate pain.

Dr. Jiang-Hong Ye, MD, New Jersey Medical School, presented research on the analgesic effects and mechanisms of electroacupuncture in treating hyperalgesia. Richard Harris, PhD, from the University of Michigan, presented his research on how different chronic pain patients have a different response to sham and verum acupuncture. Jun Mao, Memorial Sloan Kettering Cancer Center, presented on oncology acupuncture, and Dr. Weidong Lu from Dana Farber, Harvard, presented data on the impact of acupuncture on axon degeneration of distal nerve endings in chemotherapy neuropathy patients.

Following these was a session on **extra neural mechanisms of action**. First, Dr. Maiken Nedergaard, University of Rochester, who discovered the glymphatic system and its role in the clearance of fluids and solutes, presented a captivating video that shows the flow of brain interstitial fluid as it reaches homeostasis. Dr. Helene Langevin, NCCIH presented on the biophysical model and the involvement of connective tissue in pain.

Ru Rong Ji, Duke University, discussed the role of cytokine modulation as a mechanism for the analgesic effects of electroacupuncture in chemotherapy neuropathy patients. Dr. Suzanna Zick, University of Michigan, presented on the interrelationship between the inflammatory process and the common cancer symptom cluster; chronic fatigue, insomnia, mood disorders and pain. The session was concluded with Dr. Elsbet Stener-Victorin of the Karolinska Institute who presented on endocrine and metabolic regulation by acupuncture.

Session III focused on **non-specific effects of acupuncture**, kicked off by Dr. Ted Kaptchuk, Harvard University School of Medicine. He discussed placebo effects of acupuncture, from both clinical findings but also new information on the genomic findings in placebo research. Dr. Jian Kong from Harvard presented on using the power of the mind in acupuncture treatment. The session was concluded with Dr. Vitaly

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Napadow from Harvard, who discussed how fMRI hyperscan supports the theory that the patient acupuncturist therapeutic alliance effects pain modulation.

Session IV was on **overcoming barriers for clinical research of acupuncture**. The session's first presenter was Dr. Hugh MacMherson, University of York, UK, who discussed the challenges in evaluating specific and non-specific effects of acupuncture in clinical trials for cancer pain. He was followed by Col. Richard Niemtow, MD, founder of Battlefield Acupuncture. He discussed challenges he faced when creating the Acupuncture Training Across Clinical Settings (ATACS) program to deploy the Battlefield Acupuncture across the Department of Defense and the Department of Veterans Affairs.

Dr. Paul Crawford, Uniformed Service University, discussed the lack of coordination and connection between the research scientists in the lab and the clinicians treating patients. He offered solutions the NIH could use to assist in bringing successful treatments to public knowledge. Songping Han, Peking University, presented data on

(L-R) Liz Spetnagle , Korina St. John, Jason Bussel, Jennifer Stone, Lee Hullender Rubin, and Rosa Schnyer
Photo courtesy Korina St. John

The highly esteemed federally funded acupuncture researchers. Photo courtesy Korina St. John

prolonged use of electroacupuncture causing tolerance to the treatment similar to prolonged use of morphine. This could explain why some people are non-responders to acupuncture.

Rosa Schnyer, University of Texas, discussed the barriers in translating clinical practice into fundamental science. Rosa says we must not only seek to translate fundamental science into clinical practice, but we must also seek to apply knowledge derived from clinical practice to inform clinical trial design.



Dr. Gary Deng, Memorial Sloan Kettering Cancer Center, presented data his team collected on acupuncture as a non-narcotic pain management intervention in patients with multiple myeloma. Dr. Wenli Liu, MD Anderson Cancer Center, discussed gaps between acupuncture research and practice and overcoming methodological challenges. Dr. Jiang Ti Kong, Stanford University, discussed electroacupuncture treatment for chronic low back pain and the use of quantitative Sensory Testing as both a measure and a predictor of responders.

The conference was concluded with Marge Good from the National Cancer Institute and Linda Porter from the National Institutes of Health who each discussed the future of NIH resources in supporting clinical trials.

The NIH has funded acupuncture research for over 30 years and continues to support acupuncture research in the U.S. A recent search on acupuncture revealed 49 studies listed in the NIH's RePORTER database of current studies. https://projectreporter.nih.gov/reporter_searchresults.cfm

Years of acupuncture research have provided enough evidence for policymakers to realize that acupuncture works and acupuncture saves healthcare dollars. Acupuncture is now a recommended procedure for multiple diseases and syndromes in mainstream medicine and is a covered expense under many healthcare plans.

For more information on what the current research tells us, please visit:

<https://nccih.nih.gov/grants/acupuncture/priorities>

Helene Langevin and Jian Kong



Listed below are research topics that are considered by NCCIH as areas of low and high program priority for acupuncture research.

Areas of Low Programmatic Priority

NCCIH **strongly discourages** researchers from submitting research proposals in areas of low programmatic priority.

- Research comparing clinical outcomes of verum and sham acupuncture
- Research comparing individualized to standardized acupuncture treatment protocols
- Studies proposing use of moxibustion in the delivery of acupuncture interventions. Moxibustion may be difficult to deliver in most healthcare or integrative practice settings, given a variety of practical and occupational/environmental safety issues.

Areas of High Programmatic Priority

- Studies that address the pragmatic clinical and healthcare policy questions of whether acupuncture should be incorporated into clinical pain management strategies of patients with pain conditions where there is robust evidence of beneficial effects
- Large pragmatic studies for pain management addressing important clinical or policy questions, such as "Does a comprehensive pain management approach including availability of acupuncture improve pain management and reduce prescription opioid use in a clinical population?"
- Basic and clinical research to elucidate or quantify biological mechanisms of acupuncture analgesia in conditions in which beneficial effects are well-documented, and to clarify the degree to which effects are due to specific effects of needling or due to nonspecific effects related to the patient-provider interaction such as conditioning, patient expectations, self-empowerment effects, and placebo effects
- Studies to elucidate or quantify potential specific biological effects of electro-acupuncture for pain management using human experimental paradigms and quantitative sensory testing (QST) measures
- Development and testing of electro-acupuncture protocol(s) for safety and pain conditions
- Basic and clinical research on acupuncture as a model for understanding the role of nonspecific effects (e.g., expectancy, context, placebo) and whether they can be used to enhance effectiveness of pain treatment