Brief Survey of Acupuncture
TREATING NEUROPATHIC PAIN with NEEDLING THERAPY

Osher Lifelong Learning Institute

Auburn, Alabama – February 20, 2013

“The pain of the mind is worse than the pain of the body”
-Publilius Syrus (Roman author, 1st century B.C.)

“Pain is like a magnet that attracts all attention, all energy towards itself” – A Philosophy of Pain by Arne J. Vetlesn

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Opening slide:

Image on Left: European Bloodletting Man from Hans von Gersdorff's Feldbuch der Wundartzney, published in 1528. Bloodletting was done by venesection or the application of leeches. Most of these points correspond to key acupuncture points, such as LV3, UB40, ST3, LI4, LI11, SI3, LU5, etc. Image courtesy of the National Library of Medicine, USA.

Image on Right: Acupuncture chart from Hua Shou (fl. 1340s, Ming Dynasty). This image is from Shi si jing fa hui (Expression of the Fourteen Meridians). (Published in Tokyo: Suharaya Heisuke kanko, Kyoho gan 1716). (source - Wikipedia)

Introduction:

Despite the current widespread prominence of Acupuncture, Chinese medicine as a whole encompasses a wide array of treatment modalities (many of which developed from common conceptual roots such as qi and Five Phases a.k.a., Wuxing 五行). They include, food therapy (shiliao) and herbal medicine; taijiquan and other movement arts, along with related forms of
practice (e.g. bone setting); therapeutic massage (tuina); and practices related to inner cultivation and to the healing of others, such as qigong (breathing, visualization and meditative techniques transmitted by Buddhist and Daoist teachers, as well as Confucian self-cultivation disciplines.

Discussion Outline:
- History - Astrological Roots of East and West Healing Traditions
- Present - Science Based Needling Therapy, Applying Ancient Wisdom Today
- Future - Needling Therapy and Integrative Medicine

I. Magic Medicine of the East and West:

Acupuncture’s underlying belief system is significantly similar to concepts of health and disease that underlined European and Islamic astrological medicine and bloodletting throughout the Middle-ages\(^1\). Acupuncture is presumed to have its origins in blood ritual, magical tattooing and body piercing associated with Neolithic healing practices.\(^1,2\) The Neolithic origin hypothesis is supported by the presence of non-figurative tattoos on the Tyrolean ice man - an inhabitant of the Oetztal Alps in Europe (Southern Austria) - whose naturally preserved 5,200 year old body displays a set of small cross-shaped tattoos that are located significantly proximal to traditional acupuncture points. Medical imaging shows that the middle-aged man suffered from lumbar arthrosis, and the tattoos are located at points traditionally indicated for this condition\(^3,4\).

The Early Days

穴: xué - cave. (place where demons reside)\(^2\):

穴位 xue wei – is the general term used to describe “Aperture Locations (Acu-points)”. Any small space, such as a crevice, in the body is considered a xue, while wei refers to anatomical position or location. An historic observation of the term xue, is noted by Chinese medical

\(^1\) Astrology with Needles. by Ben Kavoussi, MS, MSOM, L.Ac. http://www.sciencebasedmedicine.org/?p=583
historian Paul Unschuld, as a term associated with the shamanistic practices of the Shang and Zhou Dynasties (商朝 Shāng cháo c.1600-1046 BC) & 周朝 Zhōu Cháo 1045 BC to 256 AD). Common belief then, held that spirits and demons that resided in caves, could be combated by shamans dancing in a trance, while spearing the open air as they walked through the streets. Ancestor and spirit worship, which to a certain extent is still practiced in the modern day, was a major part of ancient Chinese society. The royal ruling class at the time enlisted the services of Shamans 巫 wū and Prescription Experts 方士 fāngshì, to treat a variety of ailments they thought to be caused by the unhappy spirits of the ancestors. The treatment protocol typically included the use of talismans, spells and incantations. For example the illness causing agent, known as wind: 風 fēng, was one form of a supernatural spirit capable of evil, 邪气 xiéqì: (evil influence).

One of the China’s earliest usage of writing for the recording events, can be found via the practice of Oracle Bone Inscriptions (Tortoise Shell Divination). That finding and other such archeological discoveries in recent times, has allowed scholars gain a better understanding of Chinese culture during 4th millennium BCE. The occult theories and ideas still attached to TCM of today came about during those early years of cultural formation.

The characters associated with the 五行 wǔxíng – Five Phases; 水 (water), 木 (wood), 火 (fire), 土 (earth) and 金 (metal), are the Chinese terms for Mercury, Jupiter, Mars, Saturn and Venus.5 The belief in a ‘cosmological correspondence’ between the houses of the Chinese zodiac and the 经络 jīng-luò channels seems to be based on the doctrine of ‘as above, so below’, which stipulated that everything in the heavens has its counterpart on earth and also in man.

The doctrine is explicitly stated in the Yellow Emperor’s Canon of Medicine (黄帝内经, huáng dì nèi jīng) as

‘Heaven is covered with constellations, Earth with waterways, and man with channels.’

(Note of Historic Changes): The 五行 5 Phases during the Zhou assigned the Heart to be Earth 土 , and later during the Han it was changed to Fire 火. Later developments changed the conception of 風 fēng from supernatural to environmental factor. In secondary Western literatures, the 五行, were erroneously translated as 5 Elements = adaptation of the classical elements, or ancient Greek elements fire, water, earth, air.

Connections - Ancient Greek & Chinese:
There is a renewed scholarly interest in studying the complexity of cultural exchange, transmission, and re-inventing that occurred during the 3,000 years of connectivity via the infamous trade route known as the Silk Road. Although Chinese knew about the morphology of the internal organs, there is no conceptual context explained in ancient Chinese medical literature, they made no attempts to develop theoretical considerations of any pathological changes in these organs or of changes brought about elsewhere in the body by these organs.

Paul Unschuld has found linguistic similarities of the notion pulmonary consumption - phthisis ['θaɪsɪs] ‘tāxīs’. n(Medicine / Pathology) any disease that causes wasting of the body, esp pulmonary tuberculosis [via Latin from Greek: a wasting away, from phthinein to waste away] “, pronounced Fei Xiao 肺消 which very likely entered China from abroad. Dr. Unschuld points to phonetic resemblances, perhaps the mythical Qibo 岐伯 might have been reference to Hippocrates, which would have been pronounced as Hicop in Han Chinese of that era.7
China was unified under the short-lived Qin dynasty in 221 BCE. The magnificent terracotta army guarding the tomb of its First Emperor reflects the power of the new imperial state. Under the succeeding Han dynasty (202 BCE-220 CE) Confucianism became state ideology and bureaucratic government became firmly established. These two dynasties had the most influence on Chinese Medicine terminologies (藏- zang: depot 命- fu: palaces/admin unit = 脏腑 zang-fu). The Qin Dynasty was able to unify all the major states of China, but in doing so, made some questionable choices in order to create standardization. It is not know the number of artifacts destroyed by the Qin emperor’s army, such as artwork, books, Buddhist and Taoist scholars and anything that was not in accordance with Legalist and Confucian doctrine. The images above depict Terra-Cotta figures made in China. The stern looking figure on the left is more often recognized iconic archeological site of the Qin Emperors tomb in Luo Yang. The smiling figure on the right are the recently discovered relics from the Han dynasty, produced during a more peaceful and stable time in Chinese history.

**Scientific investigation interrupted?**

The conservative doctrines and laws set for by Confucianism, have long been blamed as cause for the interruption of scientific investigation. The question is, why did China not follow the similar path of branching and developing the practice of surgery like so many other major contributing cultures? We do have proof that anatomical dissections in ancient China are mentioned in chapter 12 of the Ling-Shu Jing, entitled Jing-Shui 經水. Here, the imperial physician Qi Bo 函伯 explains the fundamental structures of the human organism to the emperor Huang Di 黃帝. The physician says:

> qi si ke jie pou 其死可解剖.

*Translation:*

> “After someone has died his body can be anatomically dissected (for medical investigation)”.

It should be noticed that the modern Chinese characters for anatomy are still the same, namely jie pou 解剖; accordingly, the Chinese term for anatomy stems from this passage in the book Ling-Shu-Jing, and in fact the title of a modern Chinese book on Human Anatomy is 圖解人體解剖學手冊- tu jie ren ti jie pou xue shou ci.
Qi Bo points out that the interior of the body can be judged by measuring the structures on the outside (skin, muscles, bones etc.) of a person, and that the internal organs - Zang Fu 臟腑, their capacity, their contents, and the length of the blood vessels, the quality of the arterial and venous blood including the amount of Qi, can be evaluated by anatomical post mortem dissections. In the view of German Sinologist Claus S. Schnorrenberger, the description of the courses of the blood vessels as laid out in chapter 10 of the Ling-Shu-Jing, are the result of such dissections. Otherwise how else can we explain that the ancient physicians could name the respective viscera properly, could locate them in their topographically correct position and link them to the vessel pathways leading to the periphery of the body. In chapter 31 of the Ling-Shu-Jing, entitled Intestines and Stomach (Chang Wei 腸胃), the figures of the following anatomical measurements of the human body are listed:

- Distance from the lips to the tongue
- Width of the human mouth
- Distance from the teeth to the vocal cords (larynx)
- Internal volume of the mouth
- Weight of the tongue
- Length of the tongue
- Width of the tongue
- Weight of the larynx
- Width of the esophagus
- Length of the esophagus
- Length of the stomach
- Circumference of the stomach
- Diameter of the stomach
- Maximum capacity of the stomach
- Length of duodenum and jejunum
- Circumference of the small intestine
- Diameter of the small intestine
- Topography of the course of the large intestine
- Circumference of the colon descendens
- Diameter of the colon descendens
- Length of gastro-intestinal tract from mouth to anus

Around ninety works on acupuncture were written in China between the Han Dynasty and the Song Dynasty (~1,000 years), and the Emperor Renzong of Song, in 1023, ordered the production of a bronze statuette depicting the meridians and acupuncture points then in use. However, after the end of the Song Dynasty, acupuncture and its practitioners began to be seen as a technical rather than scholarly profession, due to the influence of Neo-Confucianism, which frowned upon the type of manual labor associated with needling therapy and bone setting. It became more rare in the succeeding centuries, supplanted by medications and became associated with the less prestigious practices of shamanism, midwifery and moxibustion.
**Mistranslations**

**經脈 Jing Mai – Vessel Network:**
Numerous lay and medical practitioners of Chinese needling therapy (acupuncture) rely on the Western metaphysical constructs of energy and blood circulation by meridians/channels. This mistranslated concept was first introduced to Europe, by George Soulé de Morant in 1939 with his rendering of the Chinese vessel theory of cardiovascular circulation of vital substances. This idea is contrary to the historic facts of Chinese medicine, as well as to known anatomy and physiology. The term “meridian” originates from geography. Geographic meridians are related to the station of the sun at noon and are named Zi Wu Xian in modern Chinese. They are not an aspect of modern medicine. This term has now been adopted by both Chinese and Western publishers and is often used by practitioners when describing CM physiology concepts.

(QI 氣 = “vapor” (气) and “food” (米).
Hippocratic writings mention physai ek ton perittomaton, “vapors from food.”

American scholars of medical history and East Asian studies ascribe the use of these and other terms and concepts, to reasons of consumerism and Orientalism (A central idea of Edward Said, that Western knowledge about the East is not generated from facts or reality, but from preconceived archetypes which envision all “Eastern” societies as fundamentally similar to one another, and fundamentally dissimilar to “Western” societies.)

**Schematic view of Chinese cardiovascular system organization and vessel branching**

The branching vessel networks was a key discovery of Chinese, that understood the continuous branching of larger vessels, to form smaller vessels for out-flowing arteries and the reverse process for the return-flowing veins. The character mai (脉/脉) for vessel, depicts the concept of branching and is applied to all arteries and veins. The main longitudinal vessels (jingmai) flowing lengthwise in the body give rise to collateral branches (絡絡) to form luomai.
(络脉), which further branch into micro or fine vessels (孙孙) vessels to form sunmai. The sunmai consist of arterioles, capillaries, and venules that connect the out flowing arteries to the return flowing veins, completing the circulation of blood, “like a ring without end.”

II. 病 – East and West View on Pain:

A. TCM – Only 5 of 162 chapters of The Yellow Emperor’s Internal Classic 黄帝内经 HuangDi NeiJing, which consists of two parts Simple Questions 素問 SuWen and Spiritual Pivot 灵樞 Ling Shu, explicitly mention pain in their title.

1. 举痛论 Ju Tong Lun - Discussion on Enumerating Pain (SuWen 39)
2. 剧痛 Ci Yao Tong – Discussion on Puncturing (Bleeding) Back Pain (Su Wen 41)
3. 痹论 Bi Lun – Bi Syndrome (Su Wen 43)
4. 周痹 Zhou Bi - Erratic and Cyclic Pains (Ling Shu 27)
5. 论痛 Lun Tong – Discussion on Pain (Ling Shu 53)

Pain in TCM is attributed to qi and blood stasis, caused mainly by heat, cold or in the case of Bi-syndrome (painful obstruction), wind, damp and cold combinations. According to (实用中医内科表典 – shi yong zhong yi ke biao dian) Obstruction syndrome patterns equal (19 in all)

B. WM - Acute to Chronic Pain

- Is a warning signal: immediate attention to location, initially (acute) as a stimulus, chronically as a potential underlying issue (cancer)

- Pain experience cannot be reproduced: compared to a happy memory, negative memories tend to be masked by the brain, perhaps as a safety mechanism.

- Is a subjective experience: it cannot be readily validated or objectively measured, thus it is essential to understand the extent that function is impeded by pain. It has an affective (emotional) component which motivates us to change (react), and it has a cognitive component which is context relevant (the focus of your attention can make a difference), i.e., an athlete playing a game with a major injury, Lamaze Method in child delivery)

- Can become a disease / chronic: because of neuronal plasticity, current research is showing that protracted sensitization (neuronal hyperexcitability) can result in long-term changes that may be important in the transition from acute to chronic pain (syndromes) – pain that is disproportionate to the tissue injury. “People with unrelenting pain don’t only suffer from the non-stop sensation of throbbing pain. They also have trouble sleeping, are often depressed, anxious and even have difficulty making simple decisions.

In a recent study, investigators at Northwestern University's Feinberg School of Medicine have identified a clue that may explain how suffering long-term pain could trigger these other pain-related symptoms. Researchers found that in a healthy brain all the regions exist in a state of equilibrium. When one region is active, the others quiet down. But in people with chronic pain, a front region of the cortex mostly associated with emotion "never shuts up," said Dante Chialvo, lead author and associate research professor of physiology at the Feinberg School. "The areas that are affected fail to deactivate when they should."
- Need be addressed using the “Bio-psychosocial Model”: which recognizes that pain is ultimately the result of the pathophysiology plus the psychological state, cultural background/belief system, and relationship/interactions with the environment (workplace, home, disability system, and health care providers).

Current research is investigating the neurobiological causes for persistent pain and how structural and functional changes in the central nervous system may serve to amplify and maintain the experience and disability of certain pain conditions (Siddhal and Cousins 2007).

**Pain in the Clinic:**

Types of Pain: Pain mechanisms can be broadly categorized as

- Nocioceptive or Neuropathic

  - Nocioceptive pain: is the (tissue injury) pain caused by activation of nocioceptors, which are sensory neurons found throughout the body, associated to inflammation. <i.e., Aches and sprains (back pain), arthritis, cancer pain, headache.>

  - Neuropathic pain: is pain initiated or caused by a primary lesion or dysfunction of the nervous system. <i.e., Reflex Dystrophy Syndrome, Post-Herpetic Neuralgia (PHN), Diabetic Neuropathy, Post Stroke, Multiple Sclerosis, Fibromyalgia, Spinal Cord Injuries>

Especially in chronic pain patients, it is important to assist them in improving quality of life issues (sleep, mood, locomotion). Chronic pain patients tend towards central sensitization, or mood changes and disability (anxiety, depression), which decreases their responsiveness to pain treatment or analgesia, while increasing pain sensitivity (hyperalgesia) through arousal and hypervigilance. Emotions can alter pain unpleasantness more than intensity, while cognitive process (attention) can modulate both unpleasantness and intensity.

**Treatment Approaches:**

Psychosocial factors can affect the perception and expression of pain. These might include, but are not limited to, a tendency toward anxiety, depression, somatization, fear avoidance, emotional lability, catastrophizing, job dissatisfaction and embellishment. Further, while frank malingering is rare, secondary gain factors, such as disability income and avoidance of perceived unpleasant tasks can impact the overall clinical presentation. Taken together, psychosocial factors may play a larger role in eventual patient outcome than obvious somatic factors as determined by the nature and extent of the original injury. Efforts directed solely to the management of possible pain generators without addressing psychosocial factors may result in a suboptimal outcome.

**Biomedical vs. Biopsychosocial Model**

The traditional biomedical model “assumes disease to be fully accounted for by deviations from the norm of measurable biological (somatic) variables”… it has generally failed in the treatment of chronic illness including persistent pain. For example, for decades there has been an approach to identify the “pain generator” and remove it by cutting it out or blocking it. The biopsychosocial model approaches pain and disability as a complex interplay of biological, psychological and social factors.  

<table>
<thead>
<tr>
<th>Biomedical model</th>
<th>Biopsychosocial model</th>
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<tbody>
<tr>
<td>Most appropriate for acute pain conditions</td>
<td>More useful for those with chronic pain conditions</td>
</tr>
<tr>
<td>Emphasizes peripheral nociception</td>
<td>Recognizes the role that central mechanisms play in modulating peripheral nociception or generating the experience of pain in the absence of nociception</td>
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<tr>
<td>Focus on physical disease mechanisms</td>
<td>Recognizes the importance of illness behavior including cognitive and emotional responses to pain</td>
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<tr>
<td>Reductionistic approach to understanding and treating pain</td>
<td>Multidimensional systems approach to understanding and treating pain</td>
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<tr>
<td>Reliance on medical management approaches</td>
<td>Utilization of self-management approaches</td>
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**Chronic Pain Therapy Protocol:**

1. **Setting Goals** – The patient must be including in the planning process as an active participant in the healing process. The therapist’s ideas need to be explained in order for the patient to know their role in the agreement (exercises, lifestyle changes, etc).

2. **Multi-discipline Approach** – Especially in cases of intractable pain, should include a teamwork effort, including pain specialists, psychologist, family members. Management of CRPS is best treated in an interdisciplinary pain program where the patient is evaluated and treated with appropriate medication and procedures notably nerve blocks, epidural injection, infusion pump, acupuncture, cognitive psychosocial intervention, physical exercise programs adjusted and monitored to address the patients individual needs, and biofeedback. Inactivity, immobilization, ice, braces, crutches, wheelchairs, casts, surgery and sympathectomy tend to accelerate the disease progression.16 17

3. **Focus on Functional Restoration** - Functional activities are primary in documenting improvement of work requirements and activities of daily living (ADL). Assessment of sensory, vasomotor/sudomotor changes, strength, coordination, manual dexterity, posture and alignment, range of motion and active use of the extremity are required in determining maximum improvements and treatment necessity. Resistance training is required to inhibit muscle guarding and disuse atrophy. Progressive sensory stimulation can be graded from light touch to deep pressure; pain ranging from constant to intermittent utilizing desensitization techniques to assist with normalizing sensation to the affected area.

**針 Needling Therapy**

Needling Therapy works primarily because of its interaction with the spinal afferent processing system, involving somatic nociceptive (pain), propioceptive (muscle static load, length and position), and autonomic fibers, as well as other nerves of the body that provoke local, spinal and centrally mediated control. The principal effect of this descending control is to restore autonomic balance, reduce pain and increase function (range of motion, strength, and endurance).18

Experimental evidence indicates that Needling Therapy with electric stimulation of the vagus nerve inhibits macrophage activation and the production of Tumor-necrosis factor TNF, IL-1b, IL-6, IL-8 and other pro-inflammatory cytokines and the existence of a negative feedback loop between the autonomic nervous system and innate immunity. The anti-inflammatory actions of Needling Therapy via the systemic inhibition of innate immunity by parasympathetic outflow reducing sympathetic tone may be the pathway explaining these actions, activated by Plasmin to provoke an immune response to needling.

Inflammation is a local, protective response to microbial invasion or injury. The nervous system reflexively regulates the inflammatory response in real time, just as it controls heart rate...
and other vital functions. There is evidence showing that neuronal control of acute inflammation is reflexive, directly interconnected and controllable.

Both nociceptive and proprioceptive signals stimulate additional fibers that transmit signals to the anterior horn of the spinal cord. These activate somatic motor fibers and autonomic motor fibers of blood vessels and internal organs. Nerve fibers associated with the muscular system include the Gamma Loop, needed for muscle function even though voluntary motor signals are provided by descending response pathways from brain.

Particular emphasis is placed on cholinergic anti-inflammatory mechanisms that inhibit the activation of macrophages (help initiate specific immune defense mechanisms) and the release of cytokines (activating and recruiting further immune cells). There is evidence indicating that stimulation of the vagus nerve, by either Needling Therapy, electrical or pharmacological means, prevents inflammation and inhibits the release of cytokines that are clinically relevant drug targets for treating inflammatory disease. Parasympathetic effects of the vagus nerve might explain systemic immunoregulatory actions specific homeostatic effects of acupuncture and utility as an augement to enhance outcomes for cytokine-mediated diseases.

According to Ulett and Han, the conchae of the ear is the only place on the surface of the body where the vagus nerve could easily be stimulated to produce a “broad parasympathetic effect.” The cholinergic anti-inflammatory pathway could also explain the reported antipyretic actions of acupuncture, which are believed to be mediated by the down-regulation of 2 specific cytokines, IL-6 and IL-1β. Moreover, sections of the Stomach and Spleen meridians known to generate parasympathetic stimuli nearly correspond to the known vagus nerve pathways in the supradiaphragmatic and subdiaphragmatic viscera.

**Neuroimmune Basis of Anti-Inflammatory Actions:**

The actions of placebo, hypnosis, meditation, guided imagery, prayer, biofeedback, acupuncture, and other nonpharmaceutical modalities are associated with an increase in the actions of the efferent vagus nerve. Unbroken lines represent known vagus nerve pathways; dotted lines are hypothetical. NSAID = nonsteroidal antiinflammatory drug; MSH = melanocyte-stimulating hormone; Source: Tracey KJ (2002).36

The pathways of the Stomach and Spleen acupuncture channels commonly used in inflammatory conditions nearly correspond to the known and hypothetical vagus nerve pathways. Source: Deadman P et al51.
**Effective Needling Therapy Strategy:**

Supraspinal inhibition shows the body has multiple pain control systems. One is mediated by enkephalin containing serotonin (5HT) descending fibers. The other pathway consists of norepinephrine (NE) fibers from different nuclei. 5HT may mediate normal endogenous pain and homeostasis while NE may mediate stress analgesia, as seen in predation. Neuropathic pain is “pain initiated or caused by a primary lesion or dysfunction of the nervous system”. The altered modulation of the pain response in patients with neuropathic pain causes a state of hyper-excitability and continuous pain signal output amplified in the rostral ventromedial medulla (RVM) from incoming pain signals, in the absence of tissue damage.

Vasoconstriction and pain are caused by stimulation of wide dynamic range neurons in the intermediolateral cell column of the spinal cord increasing sympathetic activity to the periphery with the release of norepinephrine. This leads to increased release of Substance P, prostaglandin and nociceptive activity. The anti-inflammatory actions of Needling therapy via the systemic inhibition of innate immunity by parasympathetic outflow reducing sympathetic tone and clear pro inflammatory cytokines. Needling prevents inflammation and inhibits the release of cytokines that are clinically relevant drug targets for treating inflammatory disease. Parasympathetic effects of the vagus nerve might explain systemic immunoregulatory actions specific homeostatic effects of acupuncture and utility as an augment to enhance outcomes for cytokine-mediated diseases.

Electro-Acupuncture

There are several approaches to Electro-Acupuncture that rely on spinal segmental and longitudinal (axial) relationships of peripheral and central nervous system. Units offer range of different output pulse patterns usually consisting of:

- **Continuous Output**
- **Discontinuous (Intermittent) Output**
- **Mixed Frequencies (Dense Disperse)**

Typical units produce pulses with positive and negative amplitudes of 60 volts that proportionately increase and decrease together as output control knob is adjusted. Amplitude only adjusted to level that patient can just feel sensation or practitioner observes slight movement of needle. Some pain and paralysis patients may have impaired ability to feel stimulating signal. Recruitment is phenomena where electro-stimulation of a few muscle fibers causes adjacent fibers to start contracting in unison. Most biological and neural processes involve low frequency responses. Increasing frequency after amplitude has been adjusted to address patient comfort and utility for treatment:

- Turn down signal amplitude on all outputs being used before switching to desired higher frequency
- Readjust amplitude for all outputs as necessary for therapeutic effect

Increasing frequency without a corresponding reduction of amplitude can lead to inducing stress analgesia (norepinephrine track).
- Used to greatly enhance effect of needling therapy, increase level of analgesia, and extend period of treatment effectiveness
- Effective for pain and musculoskeletal problems not resolved by needling alone
- Effective in reactivating neural centers habituated by drug and substance use
- Also used to enhance cervical dilatation and uterine contractions to induce labor
- Stimulation promotes tissue repair and healing essential to treat many chronic disorders
- Can promote regeneration of nerve fibers in situations where cell bodies of damaged nerves are still vital
- Considered when acute or uncomplicated case not proceeding as expected or not responding after three to five treatments
- To produce strong analgesic effect in pain and musculoskeletal problems
- May be appropriate for complicated cases but generally immediate analgesic effect could mask valuable diagnostic information

Endogenous pain and autonomic control centers in the brainstem operate around 0.5-4 Hz. Stress can be induced above 12-14 Hz. when applied to the brainstem area. Humans and animals also have stress analgesic mechanisms that can be invoked at about 100 Hz. Low frequency application (2 Hz) always invokes analgesic and restorative processes of needling therapy. 2 Hz suitable for all pain conditions, substance abuse, osteoarthritis, rheumatoid arthritis, vascular or blood distribution problems and organ dysfunction. 25-50 Hz selected in nerve dysfunction or paralysis, usually in conjunction with a low frequency (mixed mode). 25 Hz and above can produce tonic contraction of muscles and may useful in treating certain muscular conditions in discontinuous or mixed mode. Normal treatment duration is 20-35 minutes, with little risk of developing tolerance. 23
Importance of Movement Therapy:

The Chinese developed a wide range of treatment modalities to address pain, musculoskeletal, and orthopedic conditions. Movement therapy including (tàijíquán 太极拳), guided stretching (dǎoyīn 导引), and exercise for rehabilitation (kāngfù 康复), mobilization; manipulation; massage (tuīnà 推拿); pressure methods; and breathing exercise (qǐgōng 气功). Both nociceptive and proprioceptive signals stimulate additional fibers that transmit signals to the anterior horn of the spinal cord. These activate somatic motor fibers and autonomic motor fibers of blood vessels and internal organs. Nerve fibers associated with the muscular system include the Gamma Loop needed for muscle function even though voluntary motor signals are provided by descending response pathways from brain. Organs also have afferent nociceptive fibers that indicate pain and inflammation. Nodes are somatotopically related to particular internal organs and bowels. The convergence of somatic and visceral afferent signals initiates somatovisceral responses, activating the ascending spinal cord pathways, and directing supraspinal descending restorative control, including pain relief, from the brain back down to the level initially affected by needling stimulation. The stimulation of responses remote from the node location, produces distal and proximal effects involving the propriospinal system, afferent nociceptive neurons and participation of autonomic afferents to produce neural reflexes that activate CNS processes. Movement is essential as these signals also transmit to the dorsal horn of the spinal cord however, cannot be transmitted along the ascending pathway without associated somatic nociceptive fiber input. This indicates viscerosomatic relationships are basic to spinal afferent processing and control. Qi Gong breathing exercises with guided imagery with added specific movement, activate the ascending pathway and enhance needling effects.

III Current Education System in the USA & The Future of Integrative Medicine

Alternative > Complimentary > Integrative Current trends in the USA:

a. National Dept. of Defense Healthcare is putting large sums of money into research and implementation of CAM (meditation, yoga, acupuncture) As many as 17 percent of Iraq and Afghanistan veterans have some form of post-traumatic stress disorder, or PTSD, one congressional study estimates. Nearly 3,300 troops have suffered traumatic brain injury, or TBI, according to statistics assembled last summer. And the lifetime costs of treating these ailments could pile up to as much as $35 billion, a Columbia University report guesses. Source: Army’s New PTSD Treatments: Yoga, Reiki, “Bio-Energy” by Noah Shachtman http://www.wired.com/dangerroom/2008/03/army-bioenergy/
b. 70% of Americans use some form of CAM: Prevention is key for healthcare reform – 37 international indicator; 70% of chronic illnesses are due to lifestyle and environmental conditions (substance use, smoking, alcohol, diet, environment, inadequate sleep/exercise, stress management and resilience production, social integration and group support, and selective disease screening) = modifiable behavioral conditions = self care approach (education). Mind-Body approaches to induce the relaxation response. Stress management is one of the keys. Shift attention from clinical to prevention (self-awareness, self-care). Education of children (currently worst case of health: attention deficit, anxiety, depression, diabetes, hypertension) – creating wellness programs in every school.

c. Public Health (Community Health Care) – optimal healing environments which incorporate personal and cultural beliefs are healing modalities (Spiritual and Healing)

d. Ecological Model of Healing – change of the healthcare system, change of the education of healers, healing for the healers (producing a Culture of Wellness v.s. Medical Culture)

**Acupuncture Education in the USA**

Though standards are set by individual states, nearly every state has adopted the requirements established by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM). This organization requires that applicants complete a two to four year undergraduate degree followed by a three to four year graduate level program in acupuncture. Students must complete over 3,500 hours of study in acupuncture, Oriental medicine, biomedicine, and Chinese herbs. The student must also complete 660 clinical hours of practice under the watch of a trained professional.

According to NCCAOM standards, all acupuncture education must be undertaken at a school accredited by the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM). Once all educational requirements have been met, the student will sit for the NCCAOM exams. Upon successful completion of these exams, the student will be granted the title of Licensed Acupuncturist, or Doctor of Oriental Medicine. In California, students must sit for one additional state exam before state licensing is granted, but in the remainder of US states, the applicant may freely practice acupuncture once licensed.

As of 2009, there are over 60 acupuncture schools in the US that have been accredited by the ACAOM. The ACAOM has been recognized by the US Department of Education as the only organization authorized to accredit acupuncture schools in the US. Students pursuing an acupuncture education at one of these accredited schools are eligible for the same federal financial aid programs as students at traditional colleges and universities.

There is a current debate in the US about the validity of the current proposed Doctoral Programs, which vary according to state and school at which they are offered. The National Guild of Acupuncture and Oriental Medicine (NGAOM) is currently working to change the current requirements for the entry level education for graduate program in California, which according to the group has too much focus on pseudoscience and not enough focus on preparing students to be designated primary care physicians in California, in accordance with the Worker’s Compensation laws. The current national unemployment rate for American acupuncturists is 50%. There are very few acupuncturists that work in conventional medicine facilities, alongside other healthcare professionals.

**Current Picture in the USA**

In Western culture, alternative medicine is any healing practice "that does not fall within the realm of conventional medicine"27, or "that which has not been shown consistently to be effective." Commonly cited examples include naturopathy, chiropractic, herbalism, traditional Chinese medicine, Unani, Ayurveda, meditation, yoga, biofeedback, hypnosis, homeopathy, acupuncture, and diet-based therapies, in addition to a range of other practices.29 There are plenty
of skeptics and critics, which point to the absence of evidence based research, though the proponents of these modalities also point to the iatrogenic drawbacks of conventional medicine, such as the danger of surgical operations and pharmaceutical poisoning (even low-risk medication such Anti-biotics can cause potentially life threatening anaphylactic reactions in a very few individuals). The current data on the actual number of CAM (Complimentary Alternative Medicine) users in the USA can be misleading depending on the source, although the population is in fact steadily growing (the use Meditation and Yoga in particular are on the rise).

Barriers

Most alternative medicine treatments are not patentable, which may lead to less research funded by the private sector. Many countries are now working to protect their national heritage from patenting by foreigners, as a "misappropriation of traditional knowledge." Bikram Choudhury, the self-proclaimed Hollywood "yoga teacher to the stars," incensed his native country by getting a U.S. copyright on his style of yoga in 2002. A federal judge ruled in April 2005 that Bikram's copyright was legitimate and enforceable. Currently one of the major barriers to the full integration of CAM in the USA and internationally is a lack of a unified language.

Change

The Flexnor Report of 1910 was set as the cornerstone of medical education in the USA. It has been criticized as being and outdated model (intentionally left out Chiropractice/Osteopath training) The Institute of Medicine held the Integrative Medicine and Health of the Public Summit in February 2009, during which many recommendations were made as to how address the needs and implementation of changes towards an integrative medicine paradigm. Among these are a call for changes in models of care (i.e. – patient centered care), as well as workforce and education. Adam Perlman recommends a consideration of Inter-professional Education, where there is an overlap in subject matter (M.D. versed in meditation techniques, nutritional counseling). In order to be effective it must be initiated early in the education and training process – in medical schools in the case of physicians. This can lead to a better understanding between medical professions towards a more collaborative approach to patient care (lack of collaborative teams can reinforce professional territorialism). For example, in three separate research surveys that surveyed 729 schools (125 medical schools offering an MD degree, 25 medical schools offering a Doctor of Osteopathic medicine degree, and 585 schools offering a nursing degree), 60% of the standard medical schools, 95% of osteopathic medical schools and 84.8% of the nursing schools teach some form of CAM.

Signs of a Shifting in Paradigm: Spirituality and Healing

“At Mercy Medical Center in Merced, where roughly four patients a day are Hmong from northern Laos, healing includes more than IV drips, syringes and blood glucose monitors. Because many Hmong rely on their spiritual beliefs to get them through illnesses, the hospital’s new Hmong shaman policy, the country’s first, formally recognizes the cultural role of traditional healers like Mr. Lee, inviting them to perform nine approved ceremonies in the hospital, including “soul calling” and chanting in a soft voice.

The policy and a novel training program to introduce shamans to the principles of Western medicine are part of a national movement to consider patients’ cultural beliefs and values when deciding their medical treatment. The approach is being adopted by dozens of medical institutions and clinics across the country that cater to immigrant, refugee and ethnic-minority populations. Certified shamans, with their embroidered jackets and official badges, have the same unrestricted access to patients given to clergy members.

Shamans do not take insurance or other payment, although they have been known to accept a live chicken. A recent survey of 60 hospitals in the United States by the Joint Commission, the country’s largest hospital accrediting group, found that the hospitals were increasingly embracing cultural beliefs, driven sometimes by marketing, whether by adding calcium- and iron-rich Korean seaweed soup to the maternity ward menu at Good Samaritan Hospital in Los Angeles, on the edge of Koreatown, or providing birthing doulas for Somali women in Minneapolis...”

NOTES:
Footnotes:

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