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MERIDIANS

The Journal of Acupuncture and Oriental Medicine

INSIDE

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The Journal of Acupuncture and Oriental Medicine

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Cover Image: Golden shower tree in bloom. © Thanachot Pongpanich

MERIDIANS

The Journal of Acupuncture and Oriental Medicine

Letter from Editor in Chief Jennifer A. M. Stone, LAc

Welcome to the 2015 summer issue of Meridians JAOM. This issue features reports and articles by faculty of several of our top AOM schools as well as helpful resources for all our AOM schools.

Fritz Hudnut, LAc, a clinic supervisor at both Emperors College in Santa Monica and Yo San University in Los Angeles, discusses two studies in his article, "**Advances in Acupuncture Technology: A Review of Two Randomized Clinical Studies on the Treatment of Depression.**" An accompanying perspective piece on this topic, "The Roots of TCM in Depression Treatment," appears in the July issue of *Acupuncture Today*.

We also include a reprint of an earlier article about the comprehensive, pass/fail yearly exams that were developed by a faculty group at the Southern California University of Health Sciences. The article is entitled "**The Development and Implementation of Multi-Step Comprehensive Exams at a College of Acupuncture and Oriental Medicine**." Both the written and practice components assess each student's yearly progress and serve as benchmarks to measure outcomes with the curriculum.

Oregon College of Oriental Medicine DAOM candidate Cissey Xi Ye prepared an excellent case report on wet-type macular degeneration. "**Treatment of Macular Degeneration with Acupuncture: A Case Report**" concerns a 33-year-old female patient who presented with severe central vision loss due to complications of choroidal neovascularization.

A commentary by AOMA Graduate School of Oriental Medicine Master's Program Director Lesley Hamilton discusses the **six competencies identified by the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties**. She describes how AOM schools and colleges present our medicine in their training programs.

Geared toward all AOM schools, my report, "**Project to Enhance Research Literacy: Spotlight on OCOM**," provides valuable resources for schools that are starting a research program and working with limited funds. There are links to examples of presentations, course materials, syllabi, program development, evaluation and assessment of outcomes and collaboration with other institutions. Included are interviews with experts on this topic, Richard Hammerschlag, PhD and Tim Chapman, PhD.

Feed Your Fertility: Your Guide to Cultivating a Healthy Pregnancy with Chinese Medicine, Real Food, and Holistic Living by Emily Bartlett, LAc, and Laura Erlich, LAc is reviewed by fertility expert, Dr. Lee Hullender Rubin, a member of the faculties of the Oregon College of Oriental Medicine, the Oregon Health and Science University, and the New Zealand School of Acupuncture and Traditional Chinese Medicine.

"Please consider contributing a clinical pearl for possible publication in the next issue of Meridians: JAOM. We invite submissions from AOM practitioners on the topic: 'How do you treat Morton's Neuroma in your clinic?'"

In our Clinical Pearls section, we investigate several treatments for postpartum depression. Please read how these AOM practitioners treat this critical problem.

Please consider contributing a clinical pearl for possible publication in the next issue of Meridians: JAOM. We invite submissions from AOM practitioners on the topic: "How do you treat Morton's Neuroma in your clinic?" Send your 400–500 word submission, with a maximum of 5 references or notes and in a Word file, to Clinical Pearls Editor Dylan Jawahir, LAc at djawahir@meridiansjaom.com. More information is on our website: www.meridiansjaom.com. Submission deadline is August 1.

As always, we continue to invite your questions, submissions, feedback, and letters to the editor. info@meridiansjaom.com.

Thank you and we hope you enjoy reading our summer 2015 issue.

Jennifer A. M. Stone, LAc
Editor in Chief, *Meridians: The Journal of Acupuncture and Oriental Medicine*

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Advances in Acupuncture Technology: A Review of Two Randomized Clinical Studies on the Treatment of Depression

By Fritz Hudnut, DAOM, LAc

Fritz Hudnut, DAOM, LAc is a clinical supervisor at the Emperor's College of Traditional Oriental Medicine and the Yo San University student intern clinics. He has been in practice for 15 years and maintains a private practice in West Los Angeles. Fritz is the author of *Surfing the Timeless Wave*, a meditative investigation into life.

Abstract

In comparison to allopathic approaches, traditional Chinese medicine offers a long history of specialized treatment for mental-emotional disorder, including depression. Can it be found that this ancient method, with its relative simplicity, is applicable to the present model of such disorders? Reviews of two randomized clinical studies address this, using the modern applications of acupuncture modalities: electroacupuncture and LASER. The first study, done in 2004 by C. Han et al. compares electroacupuncture directly to anti-depressant medication. The second, done in 2013 by I. Quah-Smith et al. compares active laser acupuncture to non-active laser for the treatment of depression. Each of these studies found that the electroacupuncture or the laser acupuncture modality is an *effective* treatment for relieving depression based upon various objective testing measures, e.g., the Hamilton-Depression Rating Scale, etc. Further controlled trials using methodological rigor are needed to support these findings.

Key Words: traditional Chinese medicine, electroacupuncture, laser acupuncture, computer-controlled electroacupuncture machine, mental disorder, depression

Background

The problems that develop as a society approaches both the issues that cause mental-emotional disorder and the treatments offered for those so-called "mental" conditions are becoming increasingly complex and large. In 2012 the World Health Organization conducted a survey of seventeen countries around the globe. The survey found that depression affected three hundred fifty million people, making it the leading cause of disability worldwide in terms of total years lost to disability (DALYS).[1] Standard care solutions have thus far not staunched the growing tide of depression on our planet. Due to the protracted nature and scale of the problems that are entwined in our lives, depression continues to grow despite professional efforts made to diagnose and treat it. Perhaps this suggests there is room for other treatment modalities to offer assistance for this growing problem.

This review and discussion of the clinically relevant impact of acupuncture, electro-acupuncture (EA), and laser acupuncture (LA) on depression examines two recent studies that incorporate these acupuncture-based modalities as the sole treatment. The intention is to consider whether treatment of depressive disorders with traditional Chinese medicine

(TCM), specifically electro/laser-acupuncture (EA/LA) protocols, can be as effective as standard care or to discover if its traditionally based approach tends to produce results that lag qualitatively behind those developed by modern psychotherapeutic methods in use today.

According to the U.S. Department of Health and Human Services Agency for Healthcare Research and Quality, the first-line antidepressant treatment includes selective serotonin reuptake inhibitors, tricyclic antidepressants, dopamine agonists, serotonin norepinephrine reuptake inhibitors, norepinephrine reuptake inhibitors and combinations of antidepressants.[2] These medications may have strong side effects that might add other issues to the person's perception of his/her wellness or stability rather than simplifying their situation.[3]

These medications may also create psychological dependence, if not a physical dependence, to maintain a person's mental status. In that sense, medication can be seen to lose effectiveness in the attempt to maintain or achieve efficiency. There may then be a loss of compliance, with an increased risk of return to depressive syndromes.[3] Prolonged depression may even lead to thoughts of suicide or actual suicidal attempts.

In comparison to standard care, TCM offers a long history of specialized treatment for mental-emotional disorder. Can it be shown that tools from those ancient methods (now in updated TCM format) are applicable to the present model of such disorders?

Traditional Chinese medicine therapy is used in China in conjunction with allopathic medication for many conditions, including mental-emotional ones.[4,5] This paper reviews two studies in which laser acupuncture or electro-acupuncture alone have shown to be effective for the treatment of depression, among other similar mental-emotional conditions.

Methods

Recent literature showing modern developments in TCM modalities include specific studies showing positive outcomes using acupuncture/electro-acupuncture and laser acupuncture modalities in the treatment of depressive disorders as demonstrated through clinical trials. The information gathered on the topic was found through links to data on depression from NIH/NIMH/Medline, WHO, and Google but primarily during weekly searches of PubMed using the terms or some variation of: "[study OR review of] (acupuncture OR electroacupuncture) AND (depression OR dysthymia)."

"Recent literature showing modern developments in TCM modalities include specific studies showing positive outcomes using acupuncture/electro-acupuncture and laser acupuncture modalities in the treatment of depressive disorders as demonstrated through clinical trials."

The review dates of this and a number of other threads ranged between 2004 and 2014; full text articles of interest were procured during that time. Several databases containing the references that were reviewed and found to be of interest were created and maintained since starting a capstone project on acupuncture/EA treatment of depressive disorder in 2004. A comprehensive database with approximately 3,463 references, the sub-category "depression/mental-emotion," contains 963 references.

In a separate database created exclusively for "depression, no comorbidities," there are 290 references. Out of those, only 34 are included in the "research in TCM" sub-category, i.e., studies relating specifically to acupuncture, electro-acupuncture, laser-acupuncture, or possibly herbs, for the treatment of depression. Most of those 34 studies are dated from within the last few years.

From the comparatively few studies conducted on acupuncture for depression, the two selected for review for this manuscript were the sole offerings found in the scientific literature that provided unqualified positive outcomes (as opposed to inconclusive outcomes) examining TCM related treatments (EA and LA) for the relief of depressive symptoms. One of them does a direct comparison to medication.

Of note is that no sham acupuncture comparison group was used in the Han/Luo study.[6] The use of a sham acupuncture treatment for a comparison group has, for many recent studies, led to inconclusive outcomes, i.e., when verum acupuncture is compared to sham acupuncture, the outcomes are often similar.[7] Rather than citing issues of validity within their study, teams/authors may opt for "inconclusive" outcomes.[8] The term "inconclusive" will tend to cast doubt upon the modality in question when mainstream researchers conduct their reviews.[9]

The Quah-Smith study is one of the few using laser as treatment for depression. It provided the ability to maintain blinding, and outcomes were conclusively positive; hence, these two recent studies were selected for review.[10,6]

Discussion/Analysis

There has been more clinical interest in and research using acupuncture for the treatment of depression over the last decade, yet the current randomized controlled trial (RCT) evidence base is generally considered inconclusive. Trials of acupuncture for the treatment of depression have produced mixed results. In systematic reviews it was found that verum acupuncture was not any more effective than sham or waitlist control groups. The efficacy of acupuncture as an addendum therapy to standard treatments for depression has also been considered unclear, as issues of methodology have been found with many of these investigations.[11,12,13,14]

A 2004 study by C Han et al. *Clinical Study on EA Treatment for 30 Cases of Mental Depression*, is one of the team's more elegant efforts, since it was developed from their twenty plus years of studies on this topic.[6] It investigates the neurochemical effects of electroacupuncture by looking for their possible resultant biochemical mechanisms and discussing which of these could be applicable to the treatment of depression. To find that mechanism, blood tests were done to determine the plasma levels of CORT (cortisol) and ET-1 (endothelin) at pre-treatment and post-treatment.

Sixty-six people were recruited for the study, fourteen of whom were diagnosed as bipolar and forty-seven as unipolar depressive. One person left the treatment group by suicide, and four people in the drug treatment control group left due to intolerable side effects of the drug. For the TCM pattern diagnosis, patients were classified as either Liver *qi* stagnation, Heart/Spleen deficiency, Liver/Kidney *yin* deficiency, or Liver *qi* stagnation/spleen deficiency type. The two study groups had no significant differences in terms of the condition/duration of illness, sex, age, and the data was comparable ($P > 0.05$).[6]

The two comparison groups in this study are (1) EA applied to two acu-points on the head (Yintang Du-20) along with two differentially selected body points based upon an individual TCM diagnosis versus (2) the tetracyclic medication maprotiline (Ludiomil). (The team selected tetracyclic medications because they were thought to have less anti-cholinergic side effects than tricyclics.) In their previous studies, EA was only done on the selected head acu-points; however, in this 2004 study a second EA machine was added to independently stimulate the two selected body points. The machine used for the head was a computer-controlled electro-acupuncture machine. It provides a higher quality of EA stimulation; the "anti-depression" wave was selected and an intensity comfortable for the patient was used.

The body points were connected unilaterally to a regular WQ-6F machine and stimulated with a "fixed frequency of F1=80 times/second, varied frequency of F2=120 times/second" at an intensity comfortable for the patient.[6] The points were selected by TCM diagnosis, e.g., GB-34 and SP-6 for Liver *qi* stagnation and spleen deficiency, PC-6 and SP-6 for deficiency of heart and spleen, and KI-3 and SP-6 for *yin* deficiency of liver and kidney. Each treatment lasted forty-five minutes, six times a week for six weeks.

For the comparison group, maprotiline was used, and dosages were progressively increased in the first week to 100 mg/day and later adjusted again based upon symptoms and side effects to 75-250 mg/day, with mean dosage 174.22± mg/day. The medication was also given for six weeks.

Results of treatment were shown with analysis of comparisons between the two groups using Hamilton's Depression Rating (HAMD), a comparison of therapeutic effects, a comparison of TCM symptoms integrals (somatic symptoms), a comparison of Asberg (side effect) scores pre-/post- and also at weeks two and four, and finally a comparison of plasma CORT and ET-1 content(s) pre- and post-treatment. The first two ratings found "no significant differences." The third, TCM symptom integrals, found that the score value of the treatment group was superior to the medication-only group.

In the Asberg score comparison, as in all of his previous studies, the scores were higher in the medication group, meaning more side effects to contend with. These results have been, and continue to support, the crux of the Luo et al. argument that EA makes a more effective choice when treating depression. On the other hand, with maprotiline, the greatest side effects were found in week two of the treatment, therefore showing the highest scores.

As people became used to the side effects, their Asberg scores declined to pretreatment levels. The side effects did not vanish; the patients simply became acclimated to them. Finally, in the comparison between plasma CORT and ET-1, both groups showed higher levels before treatment and clearly decreased levels after the treatment—in other words, there were no significant between group differences.

The article's Discussion section states that the study was designed to bring the "character of electro-acupuncture into full play, i.e., giving somatic regulation through individual treatment." This was done by adding "the [two] differential points on the four limbs based on the mental and somatic symptoms" to the usual two head points the team used for depression–Du-20 and Yintang.[6] They maintain that their results show the same effect in improving mental symptoms in both groups studied, while EA shows additional improvements in the somatic symptoms arena. However, whereas the maprotiline would introduce side effects such as dry mouth, constipation, and palpitations, EA did not.

To determine insight into the pathogenesis of depression, its authors state that it remains unknown, although it has been suggested that dysfunction of the HPA axis may lead to changes in the neuroendocrine balance in people, thus leading to depression. In this and other studies they found that EA can decrease the CORT and adrenocorticotropic hormone (ACTH) levels.

The study found that the possible mechanisms for the effects of EA on depression could be explained by recent discoveries in the study of neuroendocrine levels that have looked at the relationship between ET-1 and the HPA axis and how that interaction may influence or occur in depression. The authors cite the research done by Lederbogen, et al. that shows the glucocorticoid hormone is involved in ET-1 activities and that ET-1 has some relation to maintaining the HPA axis activities.[15] Another study cited by Malendowicz et al. shows that exogenous ET-1 can increase plasma levels of CORT and ACTH in rats.[16] Drew GM et al. found that exogenous ET-1 can influence the cerebral memory storage function by regulating hippocampal synaptic plasticity.[17]

In the Luo et al. 2004 study, plasma endothelin and cortisol were found to be higher in people with depression than those without it, which is identical to the Lederbogen study that shows a correlation of action with endothelin in depression.[15] After treatment with either EA or maprotiline, the plasma ET-1 and CORT levels returned to normal, again showing correlation to mental state and demonstrating that the effects EA produces on CORT and ET-1.[6]

This study is right in step with the other investigations into acupuncture's mechanisms that examine its regulatory effects on brain/neurochemistry and the subsequent somatic results. It demonstrates a clinical application of work being done by scientists in the U.S., such as Dr. Z H Cho. That work is described in detail in his book *Neuro-Acupuncture*[18] and shown in fMRI images in chapter 5 of *Clinical Acupuncture - Scientific Basis by Stux/Hammerschlag*.[19]

Laser acupuncture has emerged as a well-accepted technique due to its ease of application, being both needle free and painless. It is noninvasive and so presents no risk of infection. *Laser Acupuncture for Depression: A Randomised Double Blind Controlled Trial Using Low Intensity Laser Intervention*, a 2013 study done by I. Quah-Smith, et al., found that their subjects with major depression showed positive outcomes.[10] This study examined the effectiveness of active laser acupuncture compared with inactive laser acupuncture for treatment of major depression.

Participants aged 18 to 50, with DSM-IV major depressive disorder, were eligible to join the study and were randomized by computer to either active laser acupuncture or inactive laser acupuncture. Forty-seven subjects randomly received their laser or placebo laser treatment at selected "depression acupoints" (right-sided Qimen LR-14, Juque Ren-14, left-sided Ququan LR-8, left-sided Shenmen HT-7) and (right-sided) Taixi KI-3.

A total of twelve sessions of the intervention were performed; treatments were initially twice a week for four weeks and then once a week for another four weeks. No TCM differential diagnosis was performed, as the selected acupoints based upon classical TCM syndromes were tested successfully in their earlier pilot study using laser for depression.[20]

The primary outcome assessed the change in severity of depression using the Hamilton-Depression Rating Scale (HAM-D), and secondary outcomes assessed the change in severity of depression using the Quick Inventory for Depression-Self Reporting (QID-SR) and the Quick Inventory for Depression-Clinician (QIDS-CL). Outcomes were assessed at eight weeks. The treatment response (greater than 50% improvement in HAM-D) and remission (HAM-D <8) were analyzed.

For those receiving LA, 100 mw low intensity infrared (808 nm) units were made for this study, based on the Moxla® protocol, by Advantage Health Care of Victoria, Australia. The beam in the frequency range of 808 nm is infrared and not visible to the human eye. The laser probe is in contact with and perpendicular to the skin surface to avoid scattering of the laser beam. Each laser unit was separately configured for the inactive or active laser options, although the control panel of the laser units beeped and flashed a red light when the laser probe button was pressed on either of the "A" or "B" designated units.

In the inactive group, the infrared laser beam of the machine simply did not come on when the switch was pressed. In the active group, the laser was applied to each acupoint for ten seconds to deliver one joule of laser energy at each acupoint, giving a total of five joules for the five acupoints per session. Additionally, each participant wore black lensed laser protective glasses supplied by the manufacturer, and everyone was treated in a well-lit environment to further reduce chances for blinding to be broken.

The primary endpoint was measured with the HAM-D two months after the last treatment. The primary outcome measured a reduction in the severity of depression defined as a greater than 50% reduction in score of the 17 item HAM-D. At eight weeks they found that subjects showed greater improvement in the active laser group on the primary and clinician-rated secondary outcome measures (HAM-D (mean 9.28 (SD 6.55) versus mean 14.14 (SD 4.78 p <0.001); QIDS-CL (mean 8.12 (SD 6.61 vs. 12.68 (mean SD 3.77)) p <0.001). The self-report QIDS-SR scores improved in both groups but were not significantly different between the groups.

In the active laser group, QIDS-SR scores stayed significantly lower than base line at three months follow up. On intention to treat (ITT) analyses, response rates (active laser, inactive laser) were 72.0% and 18.2% (p <0.001) respectively, and remission rates on ITT analyses (active laser, inactive laser) were 56.0% and 4.5% (p

<0.001). Transient fatigue was the only negative effect reported. On objective measures, laser acupuncture showed a clinically as well as a statistically significant benefit towards reducing symptoms of depression.[10]

The authors claim that this study is the first adequately sized double blind controlled trial of LA used for depression. LA was associated with a clinically and statistically significant reduction in HAM-D scores, and a significant number of people with major depression responded or remitted on this measure after eight weeks of LA treatment. An important strength of this trial was that blinding was well maintained for the study participants because of the lack of skin sensation from the active laser stimulation.

An item-analysis of HAM-D revealed five items significantly affected by treatment: agitation, anorexia, depressed mood, late insomnia, somatic anxiety, and other somatic symptoms. The study's demonstration of improved efficacy, with the findings of clinically and statistically significant improvement in somatic symptomatology and an almost total lack of adverse effects, is a powerful combination for improving the quality of life for the depressed. In both this and the pilot study, low intensity laser acupuncture was associated with objective improvement in depression.[10,20]

"An item-analysis of HAM-D revealed five items significantly affected by treatment: agitation, anorexia, depressed mood, late insomnia, somatic anxiety, and other somatic symptoms. The study's demonstration of improved efficacy, with the findings of clinically and statistically significant improvement in somatic symptomatology and an almost total lack of adverse effects, is a powerful combination for improving the quality of life for the depressed. In both this and the pilot study, low intensity laser acupuncture was associated with objective improvement in depression.[10,20]"

Conclusion

Two examples of research using modern applications of acupuncture technology for the treatment of depression have been discussed. The intention was to investigate whether the use of acupuncture/electro or laser therapy can help depressed persons reduce or eliminate their depression, possibly reduce any heavy medications taken, and yet still allow them to maintain mental clarity and balance (and even improve their condition to its pre-depression state) or, conversely, to discover if acupuncture's traditionally based approach tends to produce results that qualitatively lag behind those developed used in the modern psychotherapeutic methods.

Each of these reviewed studies found that the updated TCM / acupuncture technologies of EA or LA evaluated were an *effective* treatment for relieving depression. They provide similar outcomes as antidepressant medication in the one direct comparison study. Additionally, active laser was found to be better in a clinically and statistically significant manner than inactive laser, with a greater number of majorly depressed persons responding or remitting through their low intensity laser acupuncture treatment. More controlled trials using a methodological rigor that comprehends the complex modalities of TCM/acupuncture treatment are needed to further develop and support these findings.

Acknowledgement: Special thanks to Dr. John Fang, DAOM, LAc for his comments and insight during the development of this article.

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The Journal of Acupuncture and Oriental Medicine

Treatment of Macular Degeneration with Acupuncture: A Case Report

By Cissey Xi Ye, MAcOM, LAc

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Abstract

Macular degeneration is a leading cause of central vision loss. Acupuncture with accompanied lifestyle changes may be effective modalities in both stabilizing vision loss and improving qualify of life in those suffering with this condition. This is a single case study of a 33-year-old female who received acupuncture over a four month span. As a result, the patient's visual acuity improved and discontinued the use of invasive biomedical interventions.

Key Words: macular degeneration, traditional Chinese medicine, Oriental medicine, acupuncture, Chinese herbs

Introduction and Biomedical Background

Macular degeneration (MD) is a chronic eye condition that involves the deterioration of the macula. The macula is the layer of tissue in the posterior eye responsible for the sharpness and acuity associated with central vision. This condition is the leading cause of severe irreversible visual impairment in the United States in persons over 50 years of age, and its prevalence increases with age.[1,2,3]

There are two types of MD. The most common is the "dry" non-exudative type that accounts for 90% of all cases. It is characterized by a slow hardening of the arteries that nourish the eye thus cutting off nutrients and oxygen to surrounding tissue. Those affected experience a blurry spot in the central visual field that increases in size and becomes a solid blind spot as the disease progresses.

The "wet" exudative type, accounting for the other 10% of cases, is characterized by choroidal neovascularization (CNV), the proliferation of new blood vessels in the eye. These vessels will continue to grow and accumulate blood and fluid under the macula causing visual distortions. In addition to decreased central vision, these distortions cause straight lines to appear wavy or crooked.[4] Compared to dry MD, wet MD is more unpredictable and progresses rapidly; with wet MD almost always preceded by the dry form.[2] However,

"There is no cure for macular degeneration, but treatments are geared towards delaying or stabilizing vision loss. "

it is controversial whether the wet and dry forms of macular degeneration represent two distinct disease entities or end-stage manifestations of the same disease.[5]

According to the National Eye Institute, macular degeneration affects more than 1.75 million people in the U.S. and is projected to increase to 3 million by 2020.[1] The exact cause is not known, but risk factors include smoking, diet, cardiovascular disease, excessive ultraviolet light and sunlight exposure, heavy alcohol use, increased age, female gender, Caucasian ethnicity, light eye color and a family history of the condition.

Early screening is key in the detection and management of macular degeneration. Regular scheduled funduscopic eye exams, daily self-administered Amsler grid tests, and patient education are important to reduce the risk of additional vision loss.[4,6] However, if wet macular degeneration is suspected, advanced imaging such as angiography and optical coherence tomography (OCT) is used to confirm diagnosis and identify treatment.[2]

There is no cure for macular degeneration, but treatments are geared towards delaying or stabilizing vision loss. According to the age-related eye disease studies (AREDS) funded by the National Eye Institute, high-dose antioxidant supplementation plus zinc significantly reduced the risk of advanced MD and its associated vision loss.[7] However, in late stage wet MD post-choroidal neovascularization hemorrhage with severe vision loss, treatment can become more invasive.

Eye injections of anti-vascular endothelial growth factor (anti-VEGF) have become the standard of care for wet MD. Other treatment modalities that have either lost favor or are rarely used include conventional laser photocoagulation photodynamic therapy, feeder vessel photocoagulation, transpupillary thermotherapy, submacular surgery, and macular translocation.[8]

The anti-VEGF medication (ranibizumab, aflibercept, and bevacizumab) acts to inhibit new blood vessel growth in hopes of preserving or improving vision. These agents, given every 4-6 weeks for two years, are delivered by injecting into the vitreal body of the eye. It is claimed that although intravitreal injections are invasive, treatment is generally well-tolerated and adverse effects are uncommon.[6]

However, a recent safety review of all anti-VEGF drugs indicated a need for further evaluation of drug preparation and delivery method following reports of systemic adverse events such as myocardial infarction and cerebrovascular accidents.[9] It is also important to note that only afibercept and ranibiumab are FDA approved to use for the eye, whereas bevacizumab is primiary used and licensed as an intravevous treatment of metastatic colorectal cancer.[10] Even with the off-label status of bevacizumab in the ophthalmalic field, it is the most widely-used intravitreal anti-VEGF drug due to its cost effectiveness. This was assessed even after factoring in poorer anatomical outcomes and suspected higher rate of systemic serious adverse events compared with ranibizumab in head-to-head trial comparisons with ranibizumab at one year.[11]

Acupuncture and Oriental Medicine (AOM) Background

Chinese medicine categorizes macular degeneration as *qing mang* (clear blindness) and *bao mang* (sudden blindness). It is defined as a set of patterns in which there is a gradual loss of vision that may lead to instantaneous blindness without any obvious external changes to the eye.[12] Etiological factors include congenital weakness or aging that depletes the *qi, blood* and *essence* of the Liver, Kidney and Spleen. Other factors including emotional stress or traumatic injury can further cause stagnation of *qi* and blood stasis leading to a blockage in the flow of nourishment to the channels, collaterals and surrounding tissue.[13]

Main patterns include Liver, Kidney and Spleen deficiency, Liver *qi* stagnation, *qi* and blood deficiency, *qi* stagnation and blood stasis.[8] The connection of the Liver and Kidneys together provide the essence and blood that nourishes the eyes. If this these systems are weak, then vision will decline.[10]

If the Spleen is not transforming or transporting due to poor diet then there will be an inadequate supply of *qi* and blood to nourish the eye. In addition, the Liver opens into the eyes so if there is stagnation of *qi* and blood in emotional troubles, this can cause a failure of clear *qi* to rise upwards to supply the eyes.

Treatment mainly focuses on reinforcing the Liver, Kidney and Spleen to generate blood, *qi* and essence in addition to promoting proper circulation. Due to the complex network of vessels that nourish the eye, degenerative vision problems are often difficult to treat with acupuncture and Chinese herbal medicine alone.[14] Therefore, adjunctive therapies such as daily local self-massage,

cupping, *gua sha* and bleeding therapies may also be helpful to help the flow of the network vessels in dispelling stasis.

The current body of Oriental medicine literature on macular degeneration consists of few English language studies. However, the limited studies that are available show that acupuncture has a good clinical effect on treating macular degeneration. One study randomly divided 84 cases of macular degeneration into one group treated only with acupuncture and a medication group, in which oral administration of Vitamins C and E was given. It was concluded that although both treatments were effective, the acupuncture group responded better with an 88.3% improvement rate compared to the 60% rate experienced by the medication group.[15]

A similar study involved three groups: acupuncture only, medication of Vitamins C and E only and a control group. The results showed that not only did the acupuncture group show a significant improvement in eye symptoms, acupuncture also greatly improved systemic TCM symptoms such as insomnia, poor appetite, palpitations, poor memory, low back pain, and dry stools.16 Both of these studies used local eye points such Jing Ming BL-1, Cuanzhu BL-2, Cheng Qi ST-1, Tong Zi Liao GB-1, Yu Yao and Qiu Hou. These points were also accompanied by distal points to support systemic regulation such as Tai Chong LV-3 and Feng Long ST-40.

Another acupuncture study measured baseline reading and visual acuity tests at 40 cm and 3 meters in 328 patients. After two weeks of twice daily treatments (20 total txs), median vision at 40 cm was improved in 44.2% of patients while an increase of 88.4% was experienced at 40 cm.[17]

There have been preliminary animal studies on use of a formula consisting of Chinese herbs as an alternative therapy for CNV. It was shown that oral administration of a water extract of *huang qi* (Astragalus Propinquus), *dang gui* (Angelica Sinensis), *san qi* (Panax Notoginseng), *pu huang* (Pollen Typhae), *zhe bei mu* (Bulbus Fritillariae Thunbergii), all dosed at 9 g each, reduced CNV in a rat model (n = 12 for each group). The authors concluded that the effect of the herbs was comparable to intravitreal injection of anti-VEGF Avastin (bevacizumab).[18]

Case History

A 33-year-old female presented in March 2014 with right eye blindness. The patient reported that in September 2013, the blindness came on suddenly yet painlessly while at a dark movie theater. She recounted that one minute she had full central vision but then it immediately disappeared after blinking. Her peripheral vision was still intact. She was seen by an optometrist a few days later and was diagnosed with early-onset wet-type macular degeneration.

Optical coherence tomography revealed at the time of diagnosis that the baseline average macular thickness was 380 µm. From September 2013 to March 2014, the patient received a total of four injections of Avastin (bevacizumab), a vascular endothelial growth factor (VEGF) inhibitor, given at monthly intervals in September, October, December and February. The patient reported that after each injection her eyes could not be exposed to light. She was fatigued for the next 24 hours and often slept eight to ten hours after the procedure. It took about four weeks for her to notice any improvement in her vision.

Following the loss of vision, the patient's quality of life drastically changed as she became more dependent on others. She could no longer work or drive and had to enlist additional help to care for her five-year-old son. The patient expressed that she was going through an "identity crisis" and felt "useless" and "lost," which made her emotionally depressed.

"The patient expressed that she was not satisfied with her current treatment regime and had already sought after multiple opinions about the prognosis of her eyes. She ultimately wanted to decrease her dependence on pharmaceuticals and find a more natural treatment with less adverse risks and side effects."

The patient expressed that she was not satisfied with her current treatment regime and sought multiple opinions about the prognosis of her eyes. She ultimately wanted to decrease her dependence on pharmaceuticals and find a more natural treatment with less adverse risks and side effects. She reported that her physicians did not provide any lifestyle recommendations.

During this time, the patient was still attending her regular checkups with her optometrist. After doing her own research, she put herself on a daily vision supplement formula as well as an omega-3 fatty acid the week before her initial acupuncture treatment. The supplement included 5,000 IU of beta-carotene, 75 mg of vitamin C, 50 mg of bilberry extract, 7 mg of lutein and 1.4 mg of zeaxanthin. No other prescribed or over the counter

medications were reported. The patient was optimistic about trying acupuncture and welcomed any lifestyle recommendations to help stabilize her vision loss.

Also during the intake, the patient recounted that she was born three months premature and weighed only two pounds. She spent three weeks in the neonatal intensive-care unit. It was discovered that she was born with a lack of oxygen to the optic nerve in both eyes. Other significant medical history included an emergency appendectomy at age 10, eye surgery for retinal detachment due to sudden trauma of the left eye at age 14, a cataract of the left eye at age 15, and a miscarriage at age 24.

She has worn correctional eyewear since she was five years old. Exposure to bright light, long term exposure to computer monitors and stress made her vision worse. Closing and resting her eyes as well as a dimly lit environment felt good to her eyes.

Significant Ten Question Findings

The patient reported she tended to run hot, sweated easily but had cold hands. When stressed, she often got headaches in the frontal and occipital areas. She also tended to hold onto stress in her shoulders and experienced lower back pain on her right side. Her appetite was good; she ate three meals a day along with snacks. She tended to crave sweets. Her diet consisted of mostly processed food and carbohydrates. Stools tended to be incomplete, occurring every other day. Her overall energy level was a 6/10 with 0 being no energy and 10 being full of energy. She got about eight hours of sleep at night but took more than 20 minutes to fall asleep. She often got sleepy during the day and took naps. She enjoyed yoga and walking for exercise.

She was not taking birth control and had regular menstrual cycles. She bled for a total of three days with mild cramps. The blood was bright red in color with no visible clots. She did not experience severe mood swings but felt fatigued during menstruation.

Objective

The patient was 5'5" and weighed 130 pounds. Her demeanor was quiet and reserved, yet she seemed determined to do whatever was needed to improve her eye condition. The tongue body was thin and scalloped with a red tip and central crack. The overall pulse was thin, wiry and rapid with deep *chi* positions on both sides.

Diagnostic Assessment + Pathogenesis and Etiology

The main TCM disease diagnoses were *qing mang* (clear blindness) and *bao mang* (sudden blindness). There are three main patterns seen in this case. The first is Liver and Kidney *yin* deficiency as evidenced by the initial deficit of essence due to premature birth. Her spontaneous sweats and high temperature were also a sign of *yin* deficiency. The red tongue tip and rapid pulse also indicated heat due to *yin* deficiency.

The second pattern is Liver *qi* stagnation leading to Spleen *qi* deficiency. The loss of autonomy and sudden lifestyle change created lots of stress which depressed the Liver. The Liver then overacted on the Spleen leading to fatigue and a craving for sweet foods. She also experienced cold hands and had a wiry pulse, which suggested stagnation. Her disinclination to talk as well as a scalloped tongue was also an indication of Spleen deficiency.[13] Liver stagnation may also lead to heat which gives rise to the swelling and hemorrhage of the excess blood vessels in the eye. Headaches are also a sign of Liver stagnation.

The third pattern is *qi* and blood stagnation/stasis with deficiency. The many surgeries and trauma to the eye area caused scarring leading to decreased circulation of *qi* and blood to nourish the eyes. The thin tongue body and pulse also suggest *qi* and blood deficiency.

Etiology and Pathogenesis

Having been born three months premature, the patient entered the post-natal realm with a significant lack of pre-natal *essence* reserves. In addition, the patient's *essence* was further depleted through corrective eye surgery and later due to her miscarriage. The surgeries and miscarriage also depleted *qi* and blood leading to stagnation. *Essence* depletion along with *qi* and blood stagnation accelerates the aging process due to decreased nourishment of the channels, organs, and its corresponding functions. Together, these factors led to the eye disease and the deterioration of vision.

Treatments

Initial treatment principles were to tonify Kidney and Liver *yin*, dredge and harmonize the Liver, tonify the Spleen, nourish *essence* and blood, move *qi* and blood, resolve stasis, calm *shen* and open up the three leg yin channels and collaterals and brighten the eyes. The initial treatment plan consisted of acupuncture twice weekly for four weeks for a total of eight sessions. Additionally, several dietary/lifestyle recommendations were given.

Acupuncture

Acupuncture consisted of local points to surround the eye to promote circulation of *qi* and blood to the affected area and distal points were selected to nourish vital substances of *qi*, blood, *yin*, *essence* and overall constitutional deficiencies. All points were needled until a sensation of *deqi* was evoked throughout each treatment. Supplementing the Chong meridian was also emphasized, as it is the fundamental root of both pre-natal and post-natal *qi*. It also influences the three leg *yin* channels as well as controlling circulation of *qi* and blood in all channels.[19]

DBC spring type (0.25) x 30 mm 1-1.5 cun needles were used, with needle length selection based according to anatomical location. Acupuncture point location was based on Deadman's *A Manual of Acupuncture* (2007). The protocols listed in Tables 1 and 2 were repeated in each of the eight visits.[20]

Table 1 - Selection of Acupuncture Points

Right	**Local:**				
	Jing Ming BL-1	Cheng Qi ST-1	Si Zhu Kong TW-23	Zan Zhu BL-2	Yang Bai GB-14
	Tong Zi Liao GB-1	Yu Yao	Qiu Hou		
	Distal:				
	He Gu LI-4	Guang Ming GB-37	Gong Sun SP-4	Qu Quan LV-8	
Left	**Distal:**				
	Nei Guan PC-6	San Yin Jiao SP-6	Tai Chong LV-3	Zu San Li ST-36	Tai Xi KI-3
Bilateral	Tai Yang	Bai Hui DU-20			

Table 2 - Actions and Indications of Acupuncture Point Selection

Jing Ming BL-1	Local for eye, swelling and pain of eye, brighten eyes, color blindness
Zan Zhu BL-2	Local for eye, blurring and failing of visions, brighten eyes
Cheng Qi ST-1	Local for eye, courses pathogens and brightens eyes
Tong Zi Liao GB-1	Local for eye, clears channel and invigorates collaterals, benefits vision
Yang Bai GB-14	Adjacent Point, clears vision
Yu Yao	Local for eye, visual cloudiness, swelling of eye
Si Zhu Kong TW-23	Local for eye, blurring vision, clears channel and invigorates collateral
Qiu Hou	Empirical point to benefit the eyes LI-4
He Gu LI-4 + Tai Chong LV-3	Together moves qi and blood. LI-4 is command point for face. LV-3 spreads LV qi, nourishes LV blood/yin
Nei Guan PC-6 + Gong Sun SP-4	Together augments Chong, PC-6 calms shen, SP-4 regulates SP/ST to generate post-natal qi
Guang Ming GB-37	Empirical for vision problems, regulates LV and brightens eyes
Qu Quan LV-8	Tonifies liver, nourishes blood and yin
Tai Xi KI-3	Tonifies kidney: yang, yin, essence, qi
San Yin Jiao SP-6	Intersection of 3 Leg yin channels, tonifies SP, spreads LV qi, benefits KI, nourish blood.
Zu San Li ST-36	Benefits ST and SP, tonifies qi and blood. Boosts pre and post-natal qi
Tai Yang	Calms shen, clears heat, brightens eyes
Bai Hui DU-20	Brings clear yang to the head, clears senses and calms shen

"During the fourth week of treatment, the patient had a follow-up appointment with her optometrist. The optometrist reported that not only had her vision stabilized, it had actually improved with increased scores when reading the vision acuity chart. "

Dietary and Lifestyle Recommendations

Due to the patient's deficiency of pre-natal essence, it was deemed important for her to boost her post-natal *qi* production. Her diet consisted mostly of processed food and simple carbohydrates. It was recommended that the patient eat cooked, warm whole foods that are easy to digest. These foods will benefit the Spleen and Stomach to stimulate post-natal *qi* production. To nourish the Liver and Kidney and help store much needed blood, *yin*, and *essence*, the patient was advised to eat a variety of seeds, nuts, green leafy vegetables and red meat, especially organ meats.

A simple dietary tea of *ju hua* (Flos chrysanthemi), *gou qi zi* (Fructus lycii), and honey was recommended. It was also suggested that full compliance with supplements would also help provide essential nutrients to slow vision loss. Light exercise such as walking and stretching at least three times a week was also recommended. Lastly, getting enough rest and delegating others to help with daily activities, such as chores and childcare, was advised to limit fatigue and over-exertion and allow the eyes to heal.

Results/Outcomes

The patient was compliant with the treatment plan and recommendations. She reported that after the first visit she felt an increase in energy, was more relaxed and did not feel as stressed. After two weeks of treatment, her cravings for sweets also significantly diminished after abiding to a more balanced diet. She had daily bowel movements and achieved complete elimination.

The patient also reported enjoying regular exercises; she said it helped to clear her mind. During the third week of treatment, the patient's appetite increased. She started falling asleep immediately and slept soundly through the night. Throughout the first three weeks she did not report that her vision was becoming better, but she noted it had not declined any further. Aside from her eye health, she was also happy to experience improvements in her overall health.

During the fourth week of treatment, the patient had a follow-up appointment with her optometrist. The optometrist reported that not only had her vision stabilized, it had actually improved with increased scores when reading the vision acuity chart. Another optical coherence tomography scan revealed that the macular thickness had decreased from 380 µm to 350 µm, which indicated that the amount of fluid and swelling had also diminished.

Due to these results, the optometrist did not indicate any need for the continuation of further Avastin (bevacizumab) injections, diverging from the standard two year follow-up treatment protocol of injections every other month or every month. He also instructed her to continue her acupuncture treatments since it was making a significant difference in her ocular health.

> "There were many factors that attributed to the success of this case. The patient was compliant with her weekly appoints over a four month span. Since she wanted to avoid invasive biomedical procedures by embracing a more natural approach, she took it upon herself to improve her qualify of life between acupuncture treatments by making changes in her diet and exercise routine."

The patient continued to have weekly follow-up acupuncture treatments with the same point protocol for the next month. Treatments were terminated due relocation of my practice out of state. She was referred to another local acupuncturist for follow-up care. It was communicated via email three months later that she had not been indicated for any additional Avastin (bevacizumab) injections. The patient further emphasized her adherence to the dietary and lifestyle changes attributed to the stabilization of her vision along with decreased reliance on pharmaceuticals. She reported high satisfaction with her care since she does not have to undergo any additional intraveitreal injections.

Discussion

In this case, a 33-year-old female presented with severe central vision loss due to choroidal neovascularization complications of wet-type macular degeneration. However, through interventions of weekly acupuncture and lifestyle changes, the patient not only experienced stabilization of vision loss but also decreased her dependency on invasive anti-VEGF intravitreal injections. Prior to treatments, the patient received four injections over a span of five months.

Once acupuncture and lifestyle protocols were implemented twice a week for four weeks, significant quantitative improvement as well as an increase quality of life was achieved and injections were no longer indicated. Throughout her four month treatment plan, the patient did not receive a single injection. Follow-up was conducted three months later and her vision has continued to be stable without need for any further biomedical intervention.

There were many factors that attributed to the success of this case. The patient was compliant with her weekly appoints over a four month span. Since she wanted to avoid invasive biomedical procedures by embracing a more natural approach, she took it upon herself to improve her qualify of life between acupuncture treatments by making changes in her diet and exercise routine. This case is an example of how a patient's motivation and self-care can be crucial in the path to better health.

Acupuncture and lifestyle modifications can be useful modalities in treating macular degeneration. Conventional intravitreal injection treatments for macular degeneration can be invasive with added complications. However, abiding to a consistent treatment plan of weekly acupuncture and changes in diet and exercise cannot only help stabilize vision loss but also enhance quality of life. This offers a less invasive intervention to ultimately help a patient retain their vision with minimal adverse side effects.

Conclusion

Further study is indicated to assess the differences of effectiveness between intravitreal injections, AOM interventions and nutraceuticals in patients with macular degeneration. One group would receive only injections, another group would receive AOM interventions and the last group would receive AOM interventions along with nutraceuticals. Such a study design would provide data on the synergistic effect of multiple modalities upon rate of improvement compared to a single modality.

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Commentary: Reflections on Systems-Based Practice

By Lesley Hamilton, MSOM, MACM, LAc

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Introduction

At the turn of the 21st century, the Institute of Medicine focused on the poor safety record and rising costs in the United States healthcare system.[1,2] As a result, systems-based practice gained prominence in medical education and professional practice from 2000 to 2002 when the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) identified and, in 2002, adopted the six competencies in use today.[3] [See box below for the specific language of the ACGME systems-based practice competency.]

ACGME Competency

Systems-Based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- work effectively in various healthcare delivery settings and systems relevant to their clinical specialty;
- coordinate patient care within the healthcare system relevant to their clinical specialty;
- incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate;
- advocate for quality patient care and optimal patient care systems;
- work in inter-professional teams to enhance patient safety and improve patient care quality; and
- participate in identifying system errors and implementing potential systems solutions.[1,2]

1. Accreditation Council for Graduate Medical Education: Common program requirements. 2013 https://www.acgme.org/acgmeweb/tabid/429/ProgramandInstitutionalAccreditation/CommonProgramRequirements.aspx
2. Committee on Quality of Health Care in America, I.O.M., ed. Crossing the quality chasm: A new health system for the 21st century. National Academy of Sciences; 2001:364.

The sixth competency focuses on systems-based practice and includes several subdomains. These subdomains encompass working in interprofessional teams across a variety of healthcare systems to coordinate and advocate for quality and optimal patient care within such a system that enhances safety, reduces errors and costs, and improves patient outcomes. Systems range from small microsystems, such as clinics, offices or even sub-units such as an operating room or intensive care, to small macrosystems, such as a hospital or a state-wide healthcare system, and to large macrosystems, such as Medicare or a national healthcare system.[3,4]

In practice, one of the key elements of systems-based practice is performing a root cause analysis of medical errors, which shifts the culture and perspective from blaming individuals to identifying where a system needs improvement. In analysis of medical errors, it is rare that a single person is the root cause, yet errors are frequently caused in and by the systems employed.[5] Quality improvement plans/programs (QIP) become solutions to reduce if not eliminate future errors.

Influence of Systems-Based Practice

As with most new competency-driven initiatives, it takes time for each organization (e.g., medical and allied health schools, residency programs, hospitals, specialty boards, and out-patient clinics) to do its own targeted needs analysis and to identify learning objectives and changes, implementation, and assessment of outcomes. Despite underdeveloped faculty, many if not most residencies now require residents participate in or lead a QIP, yet teaching and assessing is still challenging.[6,7] In 2005-7, Varkey et al. detailed those challenges with an extensive initiative by the Mayo School of Graduate Medical Education in its 115 residency programs in three states (MN, FL, AZ).[6]

Beyond accreditation, influencing positive change in systems-based practice has been further challenged with the passage of the Patient Protection and Affordable Care Act (ACA). This adds layers including reimbursement as contingent of cost reduction, improved quality, and enhanced patient experiences.[8] Quality measurements are shifting from process to outcomes, and fee-for-service may become an outdated method for reimbursement. An example of how decisions based on costs poses a challenge is whether or not a physician should order a test; the actual cost is not just of the procedure itself but who is paying for it, whether contractual discounts are in place, and therefore the amount of the net cost.

"Despite no results from a formal survey, it would have been easy to say with little hesitation that most TCM practitioners probably feel they are outside of the U.S. healthcare system per se. However, as I now more fully understand what the system means, I have to disagree with this assessment."

Another issue is the pervasive culture of "defensive medicine," with its underlying fear of blame and liability whereby more emphasis is placed on avoiding undertreatment and underdiagnosis than on avoiding overtreatment and overdiagnosis.[8] Although many strides have been made to improve systems as a result of the mandates stemming from early in the last decade, there is a generation of work ahead, especially as the landscape of health care continues to change at a rapid pace.

The Future of Traditional Chinese Medicine within Healthcare of America

Most practitioners of acupuncture and traditional Chinese medicine (TCM) are siloed in personal professional clinical practice. They are an example of the smallest, least integrated of all microsystems. Even a small physician's office is more connected via ordering labs, dispensing controlled medications, and filing insurance.

Despite no results from a formal survey, it would have been easy to say with little hesitation that most TCM practitioners probably feel they are outside of the U.S. healthcare system per se. However, as I now more fully understand what the system means, I have to disagree with this assessment. Even if our only link to this enormous system is that of our patients, then we are connected. When we view labs obtained by others or are providers for some insurance carriers, we become more connected. TCM has other connections and they are growing. TCM practitioners are slowly being incorporated into integrative clinics and hospitals throughout the country as well as in academic institutions and research collaborations.

TCM practitioners who have received their doctoral degrees should be fully cognizant of systems-based practice and appre-

"To be involved, it is important that advanced TCM practitioners learn the language of the mainstream healthcare system. We have a message: 'TCM can provide many of the desired changes and outcomes of healthcare systems dictated by mandated reforms for the 21st century. We are reaching out to see how we can fit in and help produce these necessary outcomes. Are you ready to dialogue?'"

ciate the value this serves all patients' experiences, safety, and outcomes. As the ACA drives change for improved outcomes, reduced costs, and changes to the reimbursement model, TCM practitioners should be at the forefront in the efforts to show how their involvement in micro and macro systems can make the desired changes.

As traditionally practiced, TCM practitioners improve patient experiences by paying attention to the patient in a holistic manner. The treatment modalities used are inherently lower in cost and safer than many of the therapies of conventional "scientifically" proven and accepted methods. Recent research models are now looking at acupuncture as in-addition-to or in-place-of standard of care and using qualitative methods for assessment of results.

This is a better approach than proving or disproving acupuncture using sham acupuncture in an attempt to recreate research models that were designed for pharmaceutical trials; although the controlled double-blind may have been the "gold standard" for years, it has limited usefulness with other therapies.[9] Studying the biologic basis of energy medicines, including acupuncture, chiropractics, and mindfulness therapies, is gaining ground, especially as leading biologists are taking a new look beyond Newtonian physics and into the world of quantum physics at the cellular level.[10]

To be involved, it is important that advanced TCM practitioners learn the language of the mainstream healthcare system. We have a message: "TCM can provide many of the desired changes and outcomes of healthcare systems dictated by mandated reforms for the 21st century. We are reaching out to see how we can fit in and help produce these necessary outcomes. Are you ready to dialogue?"

I see myself in my current and evolving role in academic leadership at the AOMA Graduate School of Integrative Medicine until retirement nearly a decade away—so much time for positive change in this field! My hope is to increase the number of collaborations for the institution. The goal for such collaborations is to create more opportunities for students, faculty, and alumni to practice in integrated settings and to place TCM practitioners where they can be part of the solution instead of merely observing the problem from the outside.

I challenge other TCM academic institutions to help lead the profession forward, develop leaders within the field, and integrate the health care of America to provide solutions and improved outcomes without losing our autonomy or our approach to health.

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Project to Enhance Research Literacy: Spotlight on OCOM

By Jennifer A. M. Stone, LAc

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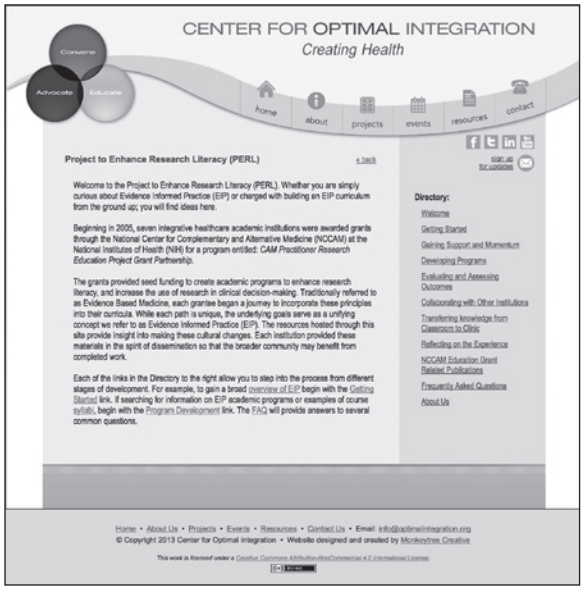
In 1999, the National Center for Complementary and Alternative Medicine (NCCAM) initiated a grant program to incorporate complementary and alternative medicine (CAM) into the curricula of conventional medical schools. Following that program, in 2005, NCCAM announced a grant program to enhance research literacy in CAM schools. Together, these projects were intended to enhance collaboration of MDs, PhDs and CAM providers in hopes this would foster new investigators and increase the dearth of CAM research in the scientific literature. (Applicant CAM colleges had to be currently accredited to offer a doctoral degree and proposals had to be submitted in partnership with a research-intensive conventional medical school.)

Nine CAM colleges were awarded Research Education Program (R25) grants after three annual review cycles. Schools awarded included chiropractic and naturopathic colleges, some of which had acupuncture programs. Oregon College of Oriental Medicine (OCOM) was the sole acupuncture-only college among the nine.

The grants provided seed funding to create academic programs to enhance research literacy and increase the use of research in clinical decision-making. Traditionally referred to as "evidence-based medicine," each grantee began a journey to incorporate these principles into their curricula.

Resources Available

The Academic Consortium for Complementary and Alternative Health Care designed and built the Project to Enhance Research Literacy (PERL) webpages on their Center for Optimal Integration project site: http://www.optimalintegration.org/project-perl/perl.php The PERL website contains materials each institution provided in the spirit of dissemination so that the broader community, including AOM schools, may benefit from completed work.



"The first iteration of the R25 awards was aimed at only conventional medical schools to strengthen their CAM curricula. OCOM had been working closely with the Oregon Health & Sciences University School of Medicine (an R25 awardee) to provide their med students with an overview, demonstrations, and clinical shadowing of TCM. "

Spotlight on OCOM

I had an opportunity to interview both Richard Hammerschlag, PhD, the principal investigator on the OCOM grant, and Tim Chapman, vice president for academic affairs at OCOM regarding their involvement with the R25 grant.

JS: Richard, how did you first find out about NCCAM's request for applications (RFA) for the *CAM* Practitioner Research Education Project Grant Partnership project?

RH: The first iteration of the R25 awards was aimed at only conventional medical schools to strengthen their CAM curricula. OCOM had been working closely with the Oregon Health & Sciences University School of Medicine (an R25 awardee) to provide their med students with an overview, demonstrations, and clinical shadowing of TCM. As a result, we were invited to attend NIH/NCCAM annual meetings of the R25 awardees, where progress among the recipients was shared. We learned from these meetings that the next phase of the R25 project would be what we came to call "reverse R25s," i.e., they would be offered to CAM colleges to enhance research literacy (but not to develop research programs per se). *NCCAM rightly perceived research as a bridge between the conventional and CAM healthcare communities*.

JS: Did you collaborate with any researchers from other research institutions or universities?

RH: OCOM partnered with the School of Nursing at the Oregon Health & Sciences University, since we felt that nursing was facing similar challenges to those of acupuncture in adapting standards of "evidence-based medicine" to a high-touch, holistic form of health care.

The process was quite similar to that of applying for any NIH grant. (One difference was that applications for an R25 were accepted only once per year; most NIH grants have three submission dates per year). NIH program officers are always available for phone chats to answer questions about the scope of grants.

JS: How long was the duration of the grants and what was the amount of the award?

RH: The grants were for four years. After the first planning year, the NCCAM program officer made a site visit to the college to review the detailed plan and determine if the subsequent three years should be awarded. (In every case, the full four years was granted.) Awards were for $250,000 for the four years – total, *not per year*.

JS: What advice might you have for other schools that want to apply for a research or education grant?

RH: In general, read the RFA carefully; have a phone chat with the listed program officer assigned to the RFA; carefully justify what you propose to do; if at all possible; collect preliminary data in support of your research plan; and make certain to include a detailed evaluation plan for both formative and summative assessments. Include a plan to disseminate your findings (internally to the college and externally to other colleges) and provide publications, continuing education, and presentations at research conferences.

JS: Tim, how were the funds from the R25 managed at OCOM?

TC: The R25 was processed at OCOM in the same way other federal grants were, with the creation of specific dedicated accounts and line items in our financial system as well as dedicated payroll codes for grant-specific employees. The whole thing was managed according to the project's approved budget. We don't have the infrastructure size that allows us a dedicated grants management division, so our director of accounting (Jayne Conley) dealt with most of the R25 grant paperwork as part of her regular work, and processed payroll, etc.

JS: How were the funds used? What did they pay for?

TC: OCOM's total award from NIH for the 4 years of the grant was $716,093. Of this, $129,188 was paid out to our consortium partner (Oregon Health & Science University) leaving $586,905 available for OCOM over the four year period. Most of these funds were used to cover specific budgeted grant expenses, primarily payroll for staff working on the grant's various projects. Consistent with other R25 grants awarded by NIH to other institutions in the past, our grant had a very low facilities and administration (F&A) rate of only 8%, which is the portion of the grant designed to

cover the institution's "indirect costs." The F&A funds available for OCOM over the four years totaled $42,608. In other words, only a relatively small amount of funds—just over $10,000 per year on average—was available from the grant to cover OCOM's general operating expenses.

JS: What were the outcomes of the funding? And what, if any, gaps do you see that need to filled in your current research curriculum?

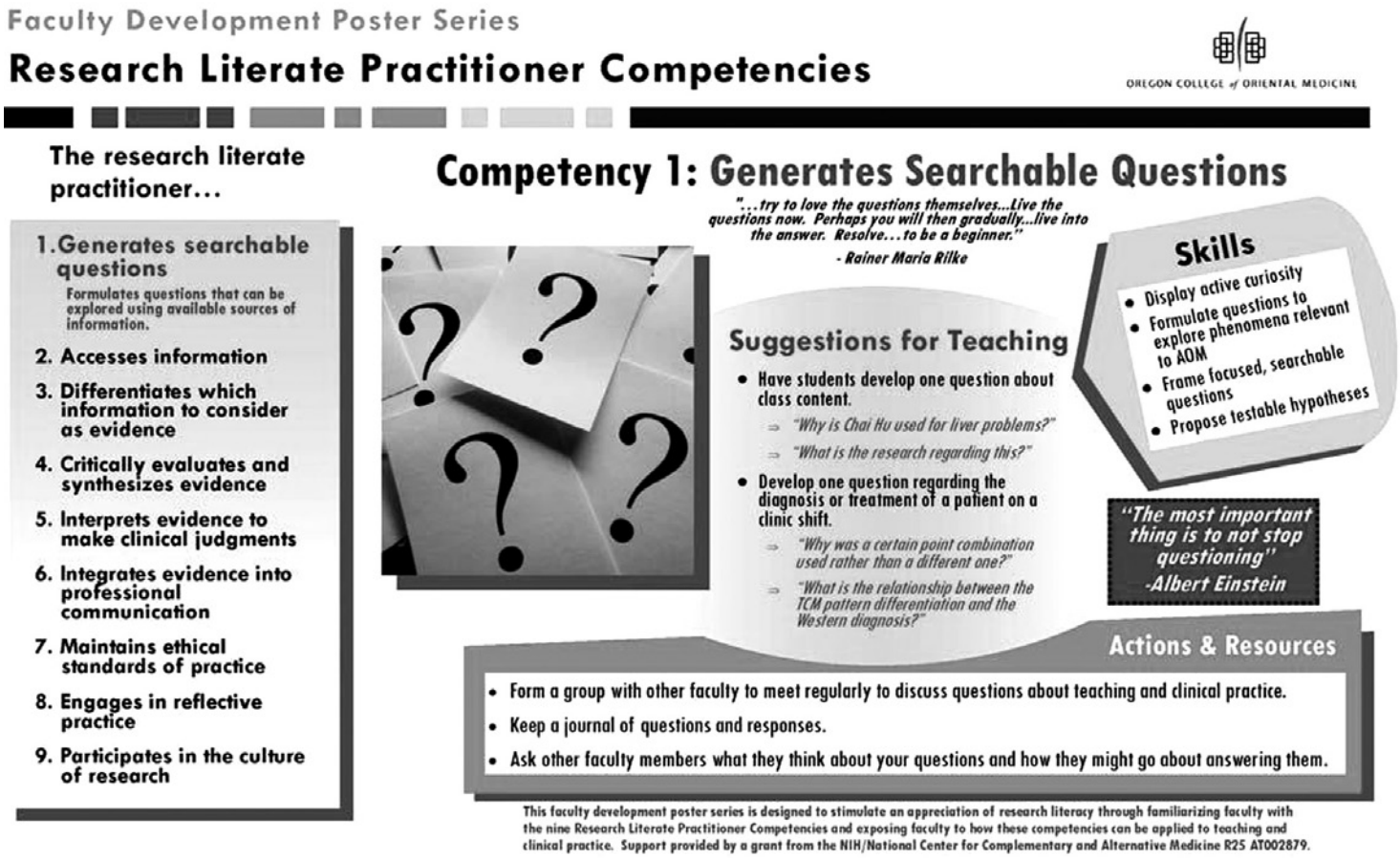
TC: As part of the grant activities a wonderful set of research competencies were developed and disseminated. These are still in use. We've tried to integrate them into the broader OCOM curriculum since that time. But this still needs systematic application in a wider way and across more curriculum components, I'd say. We also still have fairly minimal general research literacy training in our programs, in terms of traditional methods and statistics courses, and we probably can't reasonably implement this kind of thing without moving fully to a First Professional Doctorate curriculum at the entry level. This limitation mostly arises because of the incredibly overstuffed nature of the existing master's program, and the logistical difficulties associated with adding new material to the curriculum.

Also, while we generally have what I'd say is a more active research culture engaging larger numbers of faculty, staff, and students here at OCOM now than we did in the past (probably an institutional outcome that can be traced significantly to the effects of the R25), we still see significant resistance among students to the idea of learning mainstream research methods.[1] I think it will be a growing edge for this profession for a long time.

Outcomes: The Acupuncture Practitioner Research Education Enhancement (APREE)

OCOM used an innovative strategy to educate faculty and students on research literacy and to raise the profile and awareness of this initiative that, at the core, was designed to change the culture of the institution. A series of posters were created that focused on nine competencies of the research-literate practitioner. [1]

Figure 1. Research Literate Practitioner Competencies



The nine competencies (see Table 1) encompass a broad set of skills that include critically evaluating and synthesizing evidence, interpreting evidence to make clinical judgments, integrating evidence into professional communication, and participating in the culture of research. Initial work to develop the competencies was guided by the Accreditation Council for Graduate Medical Education's work on competency-based education as well as the American Library Association Information Literacy competencies. The competencies provided a framework that guided curriculum development for the three research course series at OCOM and for infusing an evidence-informed perspective into non-research courses and clinical training as well as faculty development.[2]

"The competencies provided a framework that guided curriculum development for the three research course series at OCOM and for infusing an evidence-informed perspective into non-research courses and clinical training as well as faculty development.[2]"

Infusing a Research Perspective into Non-Research Classes

A key initiative of OCOM's grant was the design of learning activities that infuse a research perspective into non-research courses in both the traditional Chinese medicine and biomedicine curricula. This approach was pilot-tested in course sequences chosen from each of the three years of the master's degree program. Learner-centered activities included Infusing Evidence and Reflection into Introductory Qigong Classes (Year 1: Qigong), Using Evidence to Inform Acupuncture Point Selection (Year 2: Point Actions and Indications), and Media and Research in Western Clinical Medicine (Year 3: Western Clinical Diagnosis).[3]

Faculty Development

OCOM believed that faculty development was essential for successful implementation of APREE; therefore, a research scholars program at OCOM was developed.[4] The program was patterned after the University Of Michigan Faculty Scholars Program that was created under an NCCAM funded R25 grant. Faculty research

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Table 1: Research Literate Practitioner Competencies

1. Generates searchable questions	Formulates questions that can be explored using available sources of information
2. Accesses information	Gathers information from multiple sources (e.g., databases, journals, clinical texts, other practitioners, patients, and direct knowing)
3. Differentiates which information to consider as evidence	Incorporates understanding of research in the selection of information relevant to the question
4. Critically evaluates and synthesizes evidence	Uses critical thinking and evaluative criteria to systematically compile, assess, and synthesize relevant evidence
5. Interprets evidence to make clinical judgments	Uses the best available evidence to inform clinical decisions, patient care, and patient education
6. Integrates evidence into professional communication	Incorporates research findings and other forms of evidence in communications with colleagues, patients, and community groups
7. Maintains ethical standards of practice	Adheres to ethical, responsible, and compassionate standards of patient care, teaching, scholarship, and research
8. Engages in reflective practice	Establishes a habit of reflecting on clinical encounters from multiple perspectives to enhance clinical practice
9. Participates in the culture of research	Reads/subscribes to professional journals; attends journal club, lectures, and conferences; converses with experts in the field; participates in research studies; writes case studies and articles for publication

The topic selected for this issue is:

How Do You Treat *Postpartum Depression* in Your Clinic?

Postpartum depression (PPD) is a serious mental health problem characterized by a prolonged period of emotional disturbance, occurring at a time of major life change and increased responsibilities caring for a newborn infant.[1] According to the American Psychological Association, 9-16% of postpartum women will experience PPD. The Center for Disease Control estimates this number to be higher, between 11 and 20%. The number is likely even higher, as both represent only diagnosed cases. The statistics also leave out those women who miscarry or deliver stillborns. Many more cases are undiagnosed and therefore go untreated.

Postpartum depression, also known as postnatal depression, is a collection of symptoms that affect a mother's ability to care for herself, her newborn, and her family. These signs and symptoms can include the mother feeling angry, inconsolable, anxious, irritable, withdrawn, and fearful. Yet it is much more than a collection of negative feelings in oneself. These emotions can lead to a lack of interest in the baby's or the mother's own life. More severe cases can indicate the new parent is thinking of abandonment, suicide, or harming her infant.

It must be noted that these negative feelings typically persist for more than a couple of weeks. The DSM-V claims that PPD needs to appear in the first four to six weeks postpartum, but some women will recollect that their depression began months after giving birth. A well-known method of screening for PPD is the Edinburgh Postnatal Depression Scale.[2] These "baby blues," a colloquial term for PPD, are treated in a Western medical setting through a combination of professional counseling, antidepressants, and hormone therapy.[3] For the very severe cases, electroconvulsive therapy is used.

From the traditional Chinese medicine (TCM) perspective, PPD is commonly given a diagnosis of *qi*, blood, and *yin* deficiency, blood stasis, or invasion of cold and wind. There are other diagnoses, but *qi*, blood and *yin* deficiency is most commonly given. Treatment can consist of a combination of herbal formulas, food therapies, and acupuncture within the scope of practice for an acupuncturist or TCM doctor. Other complementary treatments can assist the TCM modalities in improving the status of the patient.

Please see page 43 for topic selected for next issue and submission information.

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How do You Treat *Postpartum Depression* in Your Clinic?

By Dylan Jawahir, LMT, LAc, Dipl OM (NCCAOM)

Dylan Jawahir, LMT, LAc, Dipl OM (NCCAOM) focuses on injury, rehabilitation, and pain management at his clinic, August Point Wellness, LLC, in San Diego, California. Dylan has served on the board of directors of the California State Oriental Medical Association and was an editor of *All Things Healing*. He currently writes for the Jiu Jitsu Global Federation and various online publications. Jawahir balances his medical practice with martial practice of Korean Tae Kwon Do and Brazilian Jiu Jitsu. He has practiced acupuncture for five years and massage therapy for eleven years. Dylan can be reached at: dylan@augustpoint.com or visit his website: www.AugustPoint.com

Postpartum depression is a difficult assessment to make. There are several important factors that come into play to gain insight into a specific case.

First and foremost, I take a patient history. I ask the patient about her physical and emotional state during the pregnancy. I ask whether or not a support network of friends and family was available during pregnancy and if this is still the case. Dietary intake during the pregnancy is very important. I ask about cravings during the neonatal period and which of the five flavors entice the patient at the present time. Tongue and pulse are also assessed.

After doing a patient history, I look at the patient. I observe her skin, eyes, hair, nails and clothing. I palpate the channels and feel the abdomen. I then inquire about her emotional status. For me, the Edinburgh Postnatal Test is a great tool to use when assessing the patient's current state of mind.

"First and foremost, I take a patient history. I ask the patient about her physical and emotional state during the pregnancy. I ask whether or not a support network of friends and family was available during pregnancy and if this is still the case. Dietary intake during the pregnancy is very important."

I believe that many cases of PPD have some degree of blood stasis and *qi* and blood deficiency. For this scenario, I use a three pronged approach; food therapy, acupuncture, and herbal medicine are my general recommendations.

I ask the patient to increase her intake of magnesium and iron-rich foods. This can take the form of plants, such as chlorella, dark leafy greens, aloe vera gel, whole grains, and legumes. Many plants have an effect of coursing Liver *qi*—important in moving emotional stagnation. When diet won't allow adequate mineral intake, I recommend a magnesium and iron supplement. Other foods I suggest for depression are brown rice, cucumber, apples, cabbage, fresh wheat germ, kuzu root, wild blue-green micro-algae, and apple cider vinegar.[1] I also ask the patient to reduce intake of processed foods, artificial sweeteners, and sugar.

The acupuncture treatment is geared to help supplement as well as move qi and blood. SP-6, SP-10, ST-36, REN-17, and LV-3 are used. Retention time is 20-30 minutes and patient is lying face up on a heated table, with emphasis on warming the low back.

The herbal formulation I use for my patients with this condition is Gui Pi Tang. The formulation is modified to address more specific signs and symptoms depending on the patient.

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1. Pitchford P. Healing with whole foods: Asian traditions and modern nutrition (3rd ed.). Berkeley, Calif.: North Atlantic Books; 2002.

How do You Treat *Postpartum Depression* in your Clinical Practice?

By Atara Noiade, DOM, EAMP

Dr. Noiade, EAMP, DOM holds an MSci in Biosciences/Regulatory Affairs from Johns Hopkins University. She is an NCCAOM Diplomate in OM and Herbal Medicine and has served as chair of the Herbal Medicine Committee of the American Association of Acupuncture and Oriental Medicine. She practices Chinese medicine on Bainbridge Island, Washington.

A woman experiencing symptoms of PPD can be overwhelmed in her efforts to both care for a new infant and endeavor to overcome the powerful effects that PPD can have on her health. PPD can feel very isolating, especially if the patient does not have family to help with the infant. One of the most helpful things a practitioner can do is to reassure the patient that others go through this too and that she is not alone.

In Chinese medicine, PPD typically manifests as *xue xu* lending to *shen* imbalance and sometimes *yin xu*, or it may present as blood stasis.[2] Some women may display extreme behaviors, such as obsession or psychotic behavior. The Golden Mirror text, circa 1742, describes "absurd speaking, seeing ghosts and manic behavior after childbirth."[3] In treating PPD due to *xue xu* it is important to nourish the blood, calm the *shen*, and tonify the heart. The following treatment can be applied:

1) DU-20: benefits brain, calms spirit
2) CV-4: tonify Kidney *jing, yin, yang, qi,* and *xue*: apply loose moxa on needle; be sure patient is not pregnant again before applying
3) SP-6: tonify *yin* and *xue*, calms *shen* (unless patient pregnant again)
4) ST-36-tonify *qi* and *xue,* treat lassitude, treat depression and/or psychotic behavior with loose moxa on needle
5) PC-6: calm *shen*
6) CV-14: tonify Heart *qi,* calm *shen*
7) CV-15: source point of five *yin* organs, calm *shen*
8) LV-8: tonify *xue* and *yin* from emotional and physical strain
9) LV-3: tonify Liver *xue,* move Liver *qi*

I have found it effective to alternate the formulas Tian Wang Bu Xin Dan and Jia Wei Xiao Yao Wan to nourish and center in tonifying the heart and addressing *xue xu* with *qi* stagnation and *shen* imbalance. If using Jia Wei Xiao Yan San, Golden Flower Chinese Herbs produces a gentle version, Free and Easy Wanderer Plus, which has had positive results in depressed patients.[4]

It is also important to provide your patient with a daily action plan and to review a checklist of this plan. Giving the depressed patient a routine assists the patient in staying focused. An effective aspect of this treatment is physical activity. This moves the *qi* and blood and helps lift the patient's mood. A simple example of a plan I use can be found in the references section.[5] I also suggest to the depressed patient that she incorporate the six healing sounds from the Microcosmic Orbit into a sitting meditation.[6] This is a very relaxing breathing exercise which can assist in calming the *shen* and clearing the mind.

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How Do You Treat *Postpartum Depression* in Your Clinic?

By Michelle Young, MSOM, LAc, DiplOM (NCCAOM)

Michelle Young, MSOM, LAc, DiplOM (NCCAOM) has practiced for seven years in a multidisciplinary clinic in Chicago's effervescent Wicker Park neighborhood. Her treatments focus on pain management, fertility and pregnancy support, and mental health. She is also a certified doula. She may be reached at michelle@division-chiroandacu.com.

Depression following childbirth is often the result of deficiencies in the body. For nine months, the growing fetus siphons off the mother's Kidney *qi,* since it is needed for development. Women will lose approximately 500 ml (about a half of a quart) of blood in childbirth. Additionally, the commitment to breastfeeding further depletes the mother's vital resources. When the blood is deficient, the *shen* has no residence and can become anxious and depressed.

Prevention of these deficiencies is key! Although more research is still needed on this topic, placentophagy is common among mammals and has been part of the *Materia Medica* for over 2,000 years. Placenta hominis, *zi he che*, is considered rich in iron, protein, minerals and hormones that level out the postpartum emotional roller coaster. Low levels of the corticotropin releasing hormone are implicated in postpartum depression and can be regulated by consuming placenta.

For women who are prone to depression or being overly emotional, I recommend they consult a placenta encapsulationist and medicinally consume their placentas in pill form during the post-partum period. *Zi he che* can also be taken in patent herbal formulas; it is instead sourced from a pig or cow.

My acupuncture treatment plan is geared toward the most common blood deficiency type of postpartum depression. It focuses on calming the *shen*, nourishing Blood and vitalizing Kidney *qi*.

I needle these points: ST-36: reinforce; SP-6: regulate hormones; KD-3: nourish Kidney *yin*; HT-7: calm *shen* and build HT blood; CV-6: tonify Essence and resolve depression (angle slightly upward); SP-4 + PC-6: open the Chong Mai and build blood; CV-15: calm *shen*; DU-24: raise clear *yang*; GB-13: stabilize moods

> "My acupuncture treatment plan is geared toward the most common blood deficiency type of post-partum depression. It focuses on calming the shen, nourishing Blood and vitalizing Kidney *qi*."

Optional:

LV-8: to nourish the Liver Blood; KD-16: to remove energetic blockages in the abdomen, harmonize Heart and Kidney; KD-2: in place of KD-3 for empty heat and to quell fear.

All of these points are needled bilaterally, except SP4/PC6 contralaterally. Do not do more than 15 points total so as not to drain the patient. I use #34 (0.22) gauge needles on the torso and #36 (0.20) gauge needles on the extremities. I retain the needles for 35 minutes and see the patient two times per week for the first two weeks and weekly for five more weeks or as needed. Regarding herbal formulas, I will consider Si Wu Tang, Gui Pi Tang or Bu Zhong Yi Qi Tang.

Postpartum weight gain may lead women to under eat after the birth of their child, so they may not get enough calories to sustain their energy and moods. Warm, nourishing foods and 60-80 g per day of protein are recommended.

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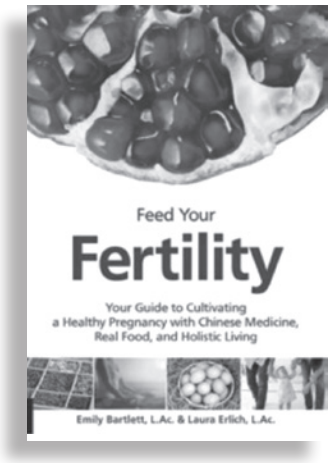


Feed Your Fertility: Your Guide to Cultivating a Healthy Pregnancy with Chinese Medicine, Real Food, and Holistic Living

By Emily Bartlett, LAc, and Laura Erlich, LAc

Book Review by Lee Hullender-Rubin, DAOM, MS, LAc, FABORM

Fairwind Publishing, Beverly, MA
224 Pages
$21.99 paperback
2015
ISBN 978-1-59233-622-3

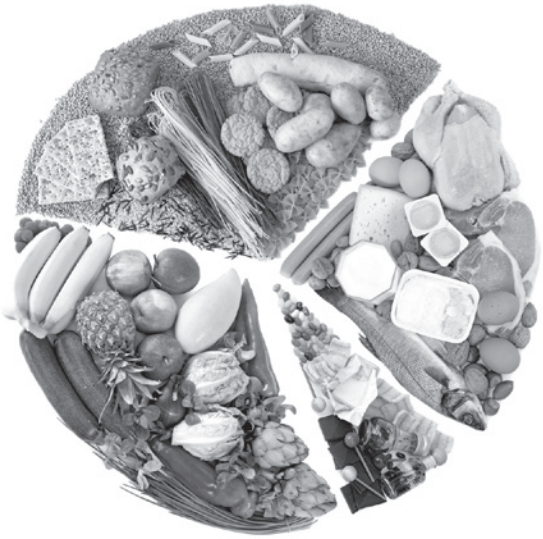
Does what we eat affect our fertility? In the new layperson's book, *Feed Your Fertility,* authors Emily Bartlett and Laura Erlich make the case that people who want to improve their fertility should use a real foods diet fused with Chinese medicine dietetics.[1] The authors, both Los Angeles-based acupuncturists, present an accessible publication that is easy to understand, search, and use. They propose dietary recommendations rooted in the Weston A. Price Foundation (WAPF) approach,[2] coupled with the wisdom of Chinese medicine-based nutritional advice.

Infertility is a public health issue affecting one in eight American couples,[3] with poor diet contributing to the ability to conceive or generate healthy sperm. In the U.S., one in three people are overweight, obese[4] or prediabetic,[5] and, while diet is not the sole source of infertility, it does have a significant influence on pathology and physiology. In addition, the maternal and paternal health at time of conception influences future generations.

"Infertility is a public health issue affecting one in eight American couples,[3] with poor diet contributing to the ability to conceive or generate healthy sperm. In the U.S., one in three people are overweight, obese[4] or prediabetic,[5] and, while diet is not the sole source of infertility, it does have a significant influence on pathology and physiology. "

Dietary and lifestyle recommendations combined with acupuncture, nutritional supplements and Chinese herbs are known in the research literature as whole systems traditional Chinese medicine, or whole systems TCM. When this comprehensive intervention was added to in vitro fertilization (IVF), it was associated with a two-fold increase in live births compared to IVF alone and a 60% increase when compared to two acupuncture treatments on the day of embryo transfer.[6] For clinicians considering what to recommend, Bartlett and Erlich make it easy to add this intervention to the treatment plan.

The book is divided into four sections, which provide both dietary and moral support for those wishing to build their families. The first section, "Causes of Infertility," gives the reader a solid background on the etiological factors leading to infertility and proposes a connection to diet. It begins with a brief chapter on the impact of stress on fertility and then discusses at more length the roles of environmental reproductive toxins and the standard U.S. diet. The authors describe how frequently encountered toxins are associated with endocrine disruption, and it proposes solutions on ways to avoid exposure. Finally, the failings of the standard U.S. diet are outlined in detail, including notes on the pervasive xenoestrogens exposure in conventionally produced foods, excess added sweeteners, and trans-fatty acids, among others.



"Foods favored within Chinese medicine are thought to support organ physiology and vital substance production associated with abundant fertility and overall wellness. Recipes are provided to support readers in incorporating nutrient dense whole foods in their diet. "

Foods favored within Chinese medicine are thought to support organ physiology and vital substance production associated with abundant fertility and overall wellness. Recipes are provided to support readers in incorporating nutrient dense whole foods in their diet. The authors also recommend eating foods raised with minimal interventions, such as antibiotic-free meat or pesticide-free vegetables and/or fruit.

Bartlett and Erlich also recommend raw dairy milk or cheese, although Chinese medicine purists argue against copious dairy consumption, as it is associated with engendering damp. The authors counter that raw dairy milk and cheese are good sources of good fat and vital nutrients, especially when combined with cultured foods. (Please note that before recommending raw dairy to patients, check your local regulations, since purchase of raw milk products is prohibited in some states.) This section concludes with an extensive chapter on vitamins and nutritional supplements.

The third section, "Dealing with Obstacles," centers on eight biomedical diagnoses impacting fertility, including polycystic ovarian syndrome, endometriosis, recurrent pregnancy loss, male infertility, among others. A chapter is devoted to each diagnosis and holds a well-described précis of western and eastern approaches. An oft-cited Hippocrates quote conveys the vital contribution food can make to treatment, "Let food be thy medicine, and medicine be thy food." This section refines diet and lifestyle recommendations proposed in the previous section. Advice is tailored to each diagnosis and ultimately aids a reader to cultivate a diet that best supports improving his or her individual presentation.

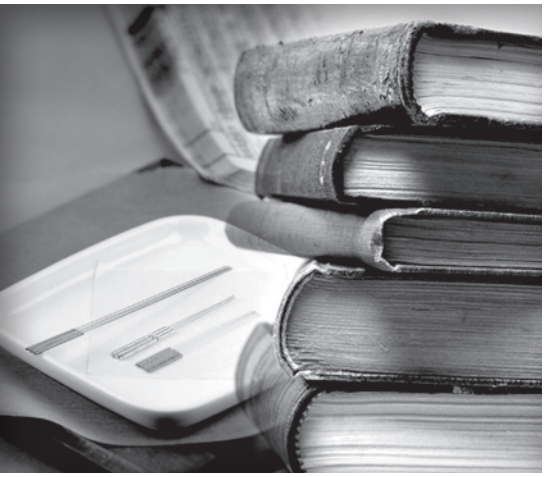
The last section shifts the focus toward support of the whole person in more than just diet. "Navigating the Medical Fertility Work" presents an overview of conventional medical fertility treatment and provides tips for successful engagement. Readers are walked through a typical medical workup and testing to assess fertility and subsequent assisted reproductive treatments, such as in vitro fertilization (IVF) or intrauterine insemination. The section concludes with a chapter on other family building options like donated sperm or eggs, surrogacy or adoption.

Concluding the book is a summary of how to use the recommendations made, an appendix outlining a sample weeklong meal plan, a glossary of medical terms, and a research study reference list. For acupuncturists who ascribe to the WAPF-style recommendation and have limited time to focus on diet and lifestyle counseling during office visits, this book can serve as a valuable resource for patients.

From a TCM perspective, reproductive vitality relies, in part, on the efficiency of the middle *jiao*—it is the source of postnatal *qi*. The centralized location houses the Stomach, the sea of water and grains, and the Spleen, the official in charge of transforming food into vital substances and moving them throughout the body. As such, a weakened or compromised middle *jiao* can contribute to or be the source of a reproductive disease or disorder.

A traditional Chinese medicine-based diet geared towards supplementing weakness, reducing excess, or both, can make a significant contribution toward the treatment goals. In the treatment of infertility, dietary recommendations can hold a central role in the treatment plan. Having the time to counsel which foods are best for your patient's constitution can be an obstacle to providing this essential treatment modality within the whole system of traditional Chinese medicine. Bartlett and Erlich's book can help fill this important gap in your treatment plan.

continued on page 44



The Development and Implementation of Multi-Step Comprehensive Exams at a College of Acupuncture and Oriental Medicine

By Wen-Shuo Wu, MD (Taiwan), MSAOM, MPH, Sivarama Prasad Vinjamury, MD(Ayurveda), MAOM, MPH, Lawrence Hsiao, MD (China), MS (China), Eric Hsiao, PhD (China), Judith Miller, MAOM

Please see bios at the end of the article

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Abstract

The College of Acupuncture and Oriental Medicine at Southern California University of Health Sciences in Whittier, California, has developed a three level pass/fail acupuncture comprehensive exam (ACE I, ACE II, ACEIII) that is administered in each year of education during the master's program. These exams include both a written exam and a practical component that uses the Objective Structured Clinical Examination (OSCE) format. The objective of these exams is to assess progress in students' critical thinking skills and knowledge in all areas of traditional Chinese medicine. The exams are used as an academic promotion criterion, requiring students to pass each one before advancing into each of the three stages of clinical internship or graduation. Lastly, the faculty uses the exam as a benchmark tool to measure outcomes with the curriculum. This paper describes the development and implementation process of these exams and the challenges faced as the format and content evolved. Additionally the details of each component in the individual exams are listed with descriptions about how they are structured, graded, and maintained. This is the first known publication that reports the intricacies of a comprehensive exam from a college of acupuncture and Oriental medicine.

Key Words: comprehensive exams, competency, traditional Chinese medicine, acupuncture education

Introduction

Students in all healthcare professions endure years of sleepless nights, thousands of hours studying, and gallons of coffee as they strive for the ultimate goal of transformation from student to healthcare practitioner. Before slipping into their white coat for internship, the culmination of their medical education is the comprehensive/qualifying exam. This comprehensive exam assesses student competency "should provide insight into actual performance (what he or she does habitually when not observed) as well as the capacity to adapt to change, find and generate new knowledge, and improve overall performance."[1]

In the United States, the progression of the student's progress into either clinical internship or to a licensed healthcare provider status is determined by examination. These exams establish a standard of practice and safety among each medical field, whether it is a medical doctor,[2] nurse,[3] physical therapist,[4] chiropractor,[5] acupuncturist and so on. These exams are

created by professional analysis of importance in each area of patient care and then weighted by significance and difficulty.[6]

The Accreditation Commission of Acupuncture and Oriental Medicine (ACAOM) also requires its colleges to implement a measurement of student achievement that tracks student progress through sequential and systematic assessments. The purpose of this paper is to describe the development and implementation of a multi-stage comprehensive exam at a college of acupuncture and Oriental medicine.

These exams are used to prepare and expose students to the challenges and content assessed on a licensure exam. Additionally, the exam results produce feedback to the educators by showing strengths and weaknesses in the academic program. They also provide students with insight on areas needing more study.[7] This paper briefly guides the reader through the challenges in developing and implementing such comprehensive exams. A search in scientific literature revealed no prior report such as this that deals with comprehensive exam development in the acupuncture and Oriental medicine (AOM) professional colleges.

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Development and Implementation of ACEs

The initial development of the Acupuncture Comprehensive Exams (ACE) was primarily prompted by the need to fulfill ACAOM's requirement to monitor student progress and competency, but secondarily it is used as a tool to aid students in preparing for their national or state board exams. ACE was created within the Master of Acupuncture and Oriental Medicine Program at Southern California University of Health Sciences in May 2002. In the initial years of the program's inception, a single written comprehensive exam was developed as an exit exam at the end of the program. This later evolved into three exams administered at specific times during the program and labeled as ACE I, ACE II, and ACE III (Table 1).

Table 1: ACE Written Exam Format

	Exam in Term	# of Questions	Duration
ACE I	4	100	2Hrs
ACE II	7	150	3Hrs
ACE III	9	200	4 Hrs

The intention of these exams is to evaluate students' knowledge, skills, and competencies as they progress in the program. ACE I and ACE II include both written and practical components, whereas ACE III is solely a written exam. All written exams are in multiple-choice format and the practical exams consist of five stations. The written assessment focuses on a basic understanding of theories and concepts, then to the assessment of an intermediate level comprehension of application, and lastly to an assessment of advanced critical thinking.

These exams are considered as independent courses and students earn a pass/fail grade. The goal of each level of exam is to gradually expose and prepare students to be diligent with the time allowed and to help them, recall, and demonstrate knowledge and competency. The college's designated ACE coordinators are faculty members of the university.

ACE I

The first comprehensive exam, ACE I, is administered during term four of the curriculum. Students are allowed to take this exam only if they have completed the required courses for the ACE I (Figure 1). The written portion of ACE I is comprised of 100 multiple-choice questions and students are allowed two hours to complete it. The test focuses on the basic understanding of traditional Chinese medicine (TCM) theories and diagnosis, materia medica (focus on single herbs), acupuncture meridian pathways and point locations, medical terminology, general anatomy and physiology, western nutrition, and application of critical thinking.

Figure 1: ACE Written Exam Content Areas

ACE I

- OM Theory I, II
- OM Diagnosis
- Materia Medica I, II, III, IV
- Acup Meridian & Points I, II, III
- Medical Terms/History Taking
- Anatomy/Physiology I, II, III
- Physical Examination
- Western Nutrition
- OM Critical Thinking I
- Clinical Observation I

ACE II

- ACE I content areas &
- Formulas & Strategies I, II, III
- OM Nutrition/Diet
- Acupuncture Prescriptions I, II
- Acupuncture Techniques I, II
- Tui-Na/Acupressure
- General/ Systemic Pathology
- Clinical Sciences/Medicine I
- Emergency Procedures
- NMS Examination
- Laboratory Diagnosis
- Imaging Interpretation
- Classics of Chinese Medicine (Shang Han Lun)
- Practice Management
- Ethics in OM
- OM Critical Thinking II
- Clinical Internship (Supervised Practice) I, II, III;

ACE III

- ACE I & II content areas &
- Pharmacotoxicology
- OM Critical Thinking III
- OM Internal Med. I, II
- Wen Bing Xue (TCM Classics)
- OM Gynecology
- Clinical Sciences II, III
- Clinical Internship (Supervised Practice) I, II, III

The practical portion of ACE1 utilizes the Objective Structured Clinical Exam (OSCE) model.[8] Students are examined on selected clinical skills that they have mastered for that level, performing them in a timed manner at a succession of five stations, each overseen by a proctor. Students are given 10 minutes to complete the assigned tasks at each station. These five practical stations include history-taking, physical exam, tongue diagnosis, herbal identification, and acupuncture point location.

Several stations utilize a standardized patient (SP) model of examination. A standardized patient is a person who has been trained to portray a patient with a particular medical condition. The use of SPs is a commonly used technology designed to help learners obtain interpersonal, communication, interviewing, counseling, assessment, physical exam and patient management skills as well as to serve as an assessment tool. Standardized patients provide consistency and validity in assessing practical exams.

In the history-taking station, students ask the standardized patient questions regarding a particular condition, with the standardized patient responding based on a scripted answer. This station assesses the ability of the student to ask appropriate questions and collect relevant and complete history of a condition. Additionally, the students are also evaluated for their communication/interpersonal skills.

In the tongue identification station, students are provided with color images of various pathological tongues. These tongue examples show varied colors, thickness of coating, and shapes. Each image has one to two tongue diagnostic skill questions that correspond to it.

In the herbal identification station, ten single raw herbs are placed in clean containers. Students are required to correctly identify them and then recall to which herbal category they belong. Only herbs from the university clinic are used for identification as these are the same herbs used in teaching the materia medica and formula courses. This ensures standardization and avoids herbal sample discrepancies.

In the physical exam station, the students' skills are tested on a standardized patient. These skills include measuring pulse, blood pressure, heart rate, conducting an oral HEENT exam, and auscultation of heart and lung. The abdominal portion of the exam includes auscultation and palpation for any abnormalities such as an enlarged liver/spleen, distended abdominal aorta, or any masses.

To assess point location skills, ten random acupuncture points are listed for location on a standardized patient. Students must find the acupuncture point and indicate the location by placing a small circular sticker on the point. Faculty who taught the point

location courses proctor this exam to ensure consistency with classroom instruction.

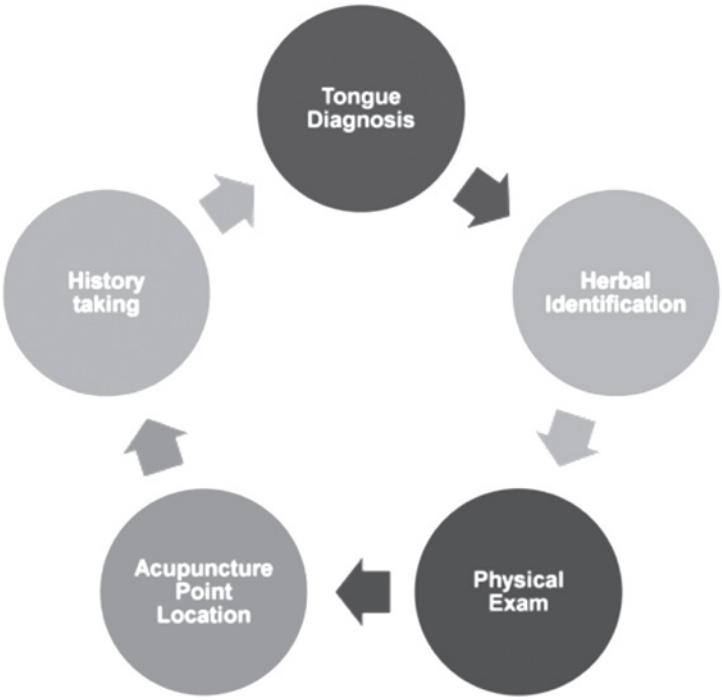
Through an anonymous survey, feedback on the exams with regard to the difficulty, clarity of questions, time allocated, etc. is collected from all students at the end of the practical exam. The survey results are used by the College to further refine the five-station exam process for future use.

ACE II

The second comprehensive exam, ACE II, is administered during the seventh term of the student's education or when the required classes for ACE II (Figure 1) have been completed. ACE II contains written and practical components as well. The written part is comprised of 150 multiple choice questions and students are allotted three hours to complete it. The increase of fifty questions from ACE I to ACE II was added to match the increased course content at that level as well as to enable students to practice taking longer timed exams. In this exam, students are expected to have a deeper understanding of the material, so the questions are more complex and require a higher level of critical thinking.

The ACE II test includes all the previous topics covered under ACE I in addition to the following course material: herbal formulas and strategies, TCM nutrition and diet, acupuncture prescription and techniques, *tuina* and acupressure, general and systemic pathology, clinical western sciences, emergency procedures, neuromuscular examination, laboratory diagnosis, imaging interpretation, classics of Chinese medicine (*Shang Han Lun*), practice management, ethics in Oriental medicine, and critical thinking. (Figure 2).

Figure 2: ACE I Practical Exam Stations



The practical component of ACE II comprises the five station model for assessing the technical skills students now in their last year of education have acquired. The five practical skills tested are neuromuscular exams, auricular acupuncture point location, acupuncture needling technique, Occupational Safety and Health Administration (OSHA) principles, and herbal formula identification (Figure 3). This practical mimics the ACE I practical in terms of utilizing the same operating procedures including use of standardized patients.

During the neuromuscular exam, students are instructed to complete exams that test for sensory and motor function of the face and extremities on a standardized patient. Additionally, students are instructed to perform more specific diagnostic neuromuscular exams related to the shoulder, elbow, spine and knees. During each step the student must verbally explain what test is being performed and its clinical significance.

In the auricular acupuncture point location station, students are instructed to locate five points on a standardized patient's ear and place an ear seed on the point. The student is expected to properly disinfect the ear probe and the patient's ear. After the student has located all the points, these points must be verbally identified to the proctor.

The acupuncture technique station simultaneously assesses the needling skill of the student and his/her ability to follow the national standard of acupuncture safety (Clean Needle Technique). The student is instructed to correctly locate a random point that is located on the legs or arms. The student then next performs either the instructed *tonifying* or *sedating* method.

Using a standardized patient for this station is difficult because the patient would have sensitive points needled numerous times. To avoid this, standardized patients are not used and instead, students are required to needle their peer who completed the exam just prior to them and then remain at the station for the next test-taker to needle them.

Additional OSHA principles and guidelines are tested by creating mock scenarios of two situations where blood borne pathogen management is demonstrated. This may include the appropriate management of a dropped needle or the safe removal of any localized bleeding from a needle site. The student is required to demonstrate the specific order of steps taken to safely manage the two clinical situations.

The last station is herbal formula identification. The herbal ingredients consist of five randomly selected formulas placed in clean containers. Students are expected to correctly identify the formula and its formula category based on visual inspection of the herbal ingredients present in each formula.

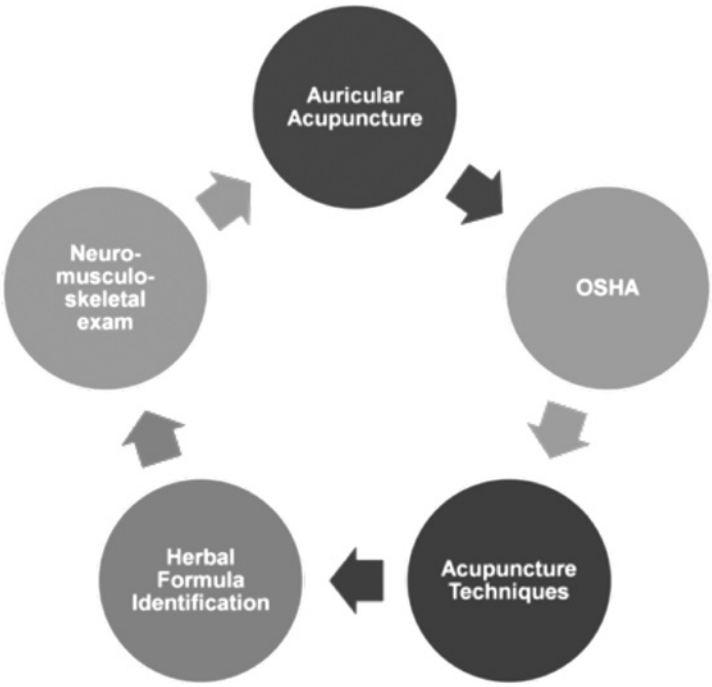
"Item analysis and sub-group analysis are done for each exam to identify the response pattern of students to individual questions. During this analysis, if a question is answered incorrectly by a majority of the students, the ACE coordinator forwards such question(s) to the entire ACE committee for reevaluation. This process is adopted to decide on the validity of the question in terms of its construction, understanding, relevance, and level of difficulty."

ACE III

The intention of the ACE III is to closely model a licensure exam. Students are asked to bring the printout confirmation email sent to them the week of the exam and provide proper personal identification (driver's license, university ID card, or passport). The exam is divided into two written parts. During the morning session, two hours is granted to test TCM theory and diagnosis, western medicine, and clean needle technique (CNT). After a one hour lunch break, acupuncture theory and herbal comprehension are tested in a session that lasts for two hours.

ACE III is administered during the ninth term, just before graduation. It consists of 200 multiple choice questions covering the entire program content. The material includes the topics covered in the previous ACE exams and theory courses, internal Oriental medicine theory and treatment, TCM classics (*Wen Bing Xue* or *golden cabinet*), Oriental medicine gynecology, and clinical western sciences II, III (Figure 1). Examinees are given a total of four hours to complete the exam. Passing this exam is a prerequisite for graduation.

Figure 3: ACE II Practical Exam Stations



Exam(s) Preparation

All the tests are very meticulously prepared. The professors teaching the topics submit questions for the written portion of each ACE exam. These questions are stored in a question bank, which is constantly updated with new questions each term. The ACE coordinators for each exam choose questions from the question bank and a draft exam is formed. Upon ACE committee approval, the exam is standardized. Standardization of an exam includes the ACE coordinator's assurance that all the questions are unambiguous, appropriate to the level and content, and that the instructions are clear.

Grading and Remediation

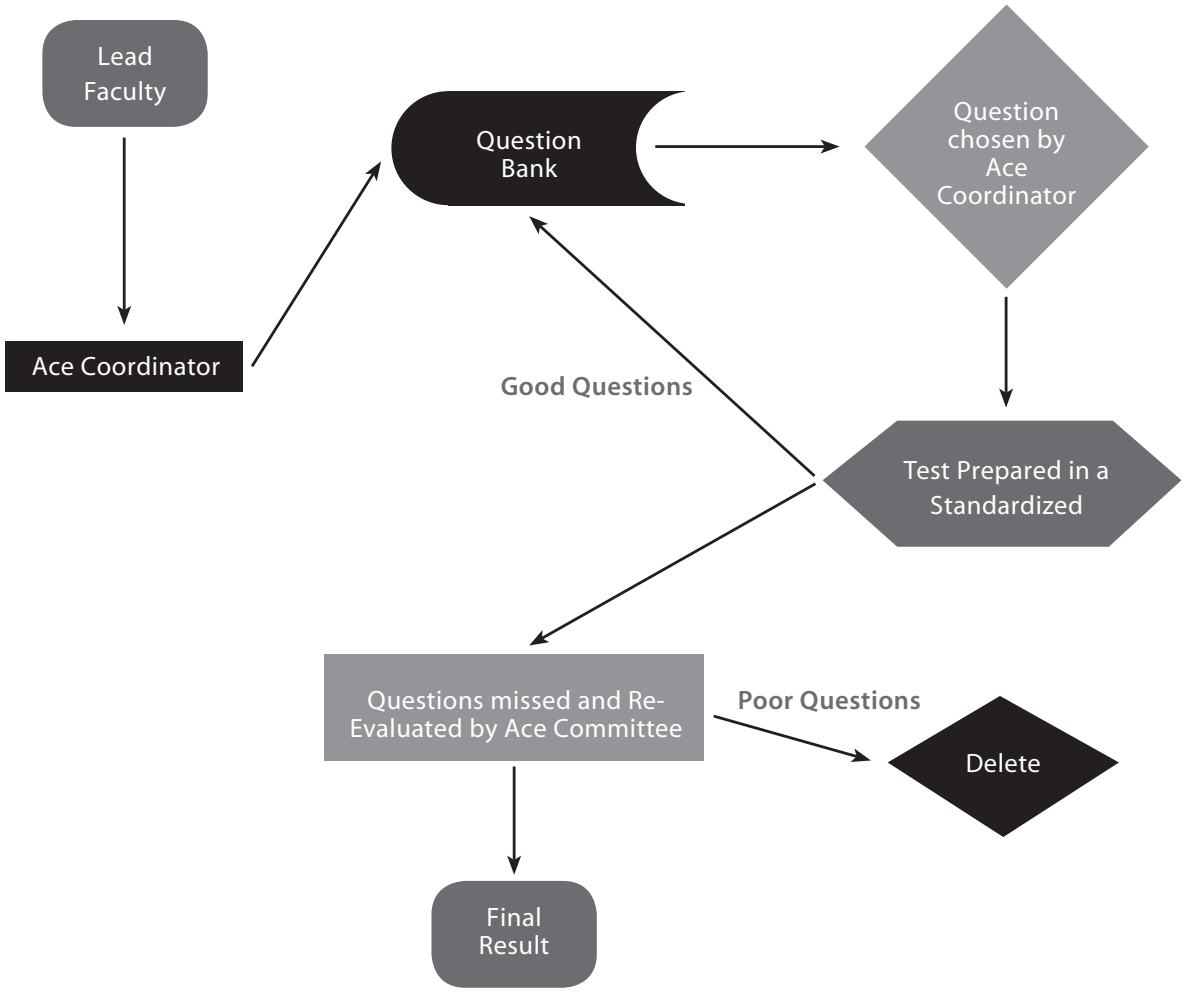
The written exams are graded using a Scranton® machine. Item analysis and sub-group analysis are done for each exam to identify the response pattern of students to individual questions. During this analysis, if a question is answered incorrectly by a majority of the students, the ACE coordinator forwards such question(s) to the entire ACE committee for reevaluation. This process is adopted to decide on the validity of the question in terms of its construction, understanding, relevance, and level of difficulty. Invalid questions are removed from the final examination result. Questions that are deemed valid and appropriate are saved in the question bank and have the possibility of being used again in future exams.

The passing score is set at 70 percent for all exams. Students who receive less than 70 percent are given another chance to retake the exam within the same term. Prior to the retake, students who failed the exam their first time are provided remediation by the ACE coordinators. During remediation coordinators identify areas the students need to emphasize to overcome their weaknesses and successfully pass the exams. Students who fail the practical exam in more than three stations are required to retake all the stations in that exam (Figure 4). Both the five station practical exams and the written ACE exams are standardized and adopt similar methods in creation, grading and remediation.

Discussion & Lessons Learned

The College of Acupuncture and Oriental Medicine (CAOM) at Southern California University of Health Sciences (SCUHS)

FIGURE 4: Written Exam Process



gradually developed and implemented this three stage comprehensive exam given at different levels of education. These exams are used as an indicator of internal standards, as a tool to identify areas of deficiency, and also as a method to provide sufficient information to faculty and administration as they continuously develop curriculum. Additionally, these exams serve as an academic promotion criterion for students/interns to progress to the next level of internship or graduation. Lastly, ACE is intended to prepare students for board exams.

The development of these exams requires a team approach and involves manpower, budget, and systematic planning. The institution's prior experience of developing such exams for the chiropractic program was very useful for creating ACE in the acupuncture and Oriental medicine program. Infrastructure such as a standardized patient's office, which oversees the recruitment, training and scheduling of these clinical models, and managing the equipment used for the practical and OSCE format, were useful and made the job easier although it needed specific optimization to suit the needs of the program.

"The development of these exams requires a team approach and involves manpower, budget, and systematic planning. The institution's prior experience of developing such exams for the chiropractic program was very useful for creating ACE in the acupuncture and Oriental medicine program."

Due to changing needs and demands, both the written and practical ACE exams have evolved over time. For example, ACE I and ACE II written exams were added. In terms of the practical exam, originally the practical portion of ACE I was a modified version of the practical exams seen on various state and national exams. However, new practical stations such as the auricular station were added to reflect the College's curriculum as well as curricular revisions. Also, to address students' deficiencies, changes have been made based on student and faculty input.

While many state or national exams have phased out the practical section of their tests, the College's ACE I and ACE II practical stations remained. We believe that the practical stations are necessary to assess the clinical skills of our students and that a written exam cannot accomplish this sufficiently. *Tuina* was tested in ACE II during the initial years of conception, but it was later decided that auricular point location should replace it because it was more practical and helpful for students in their future practice. Additionally, neuromuscular examination was added to later versions of the ACE II practical section due to its importance as a physical exam component.

"Equipment, infrastructure, scheduling and training of standardized patients, and identifying and ensuring inter-rater reliability of proctors are some of the challenges that are common with practical exams."

As expected, we faced and continue to face several challenges during this development and implementation process. Concerning the written part of these exams, management of the question bank is a challenge in terms of manpower and time. Ongoing communication with lead faculty and department chairs is important not only for collecting the latest test questions but also for implementing changes in the delivery and emphasis of material based on the students' performance on the ACE.

Equipment, infrastructure, scheduling and training of standardized patients, and identifying and ensuring inter-rater reliability of proctors are some of the challenges that are common with practical exams. When more than one practical station is set up for assessing a particular skill (e.g., the history-taking skill), it is important that the proctors at both these stations grade the examinees similarly. Training of proctors regarding how to score different aspects of the skills is important to arrive at homogeneity and inter-rater reliability.

Periodic ACE committee meetings and curricular changes as well as student feedback were used to address such reliability issues and refine the exam process and content through the years. The vice president of academic affairs, the dean of the College, and the ACE committee chair periodically reviewed the results of all ACEs and, if necessary, suggested modifications. This is a resource-driven exam model and process, but we feel it is one that brings with it numerous benefits to both students and the College.

Conclusion

The integrated comprehensive exams were successfully developed and implemented within the acupuncture and Oriental medicine program. The practical exams are more resource intensive and require systematic planning to make them effective and valuable. Regardless of the challenges, such comprehensive multi-level assessments serve as useful tools to assess the program learning outcomes as well as assist in periodically making necessary curricular changes.

BIOS:

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scholars receive research and pedagogy training in addition to mentoring support to develop research related learning activities for the courses they teach.[4,5]

Summary

The Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM) published clinical research guidelines in their eligibility requirements and standards for DAOM programs. Criteria 8.3 on page 57 of the Accreditation Manual states, "Doctoral candidates must demonstrate an integration of the knowledge and skills required in the core curriculum by completing a clinically-oriented research project…the products from individual clinical projects must be of such a nature that they meet academic form and style standards suitable for peer reviewed professional publications."[6]

Though not all AOM students choose to advance to the doctoral level, a master's level AOM program rich in research literacy can give doctoral candidates a more solid foundation to grow as new investigators. Materials produced by OCOM and other grantees of the NCCAM initiative can provide all AOM schools with resources for enhancing research literacy in their curricula. The PERL website houses resources for schools that are starting a research program, working with limited funds, and need library support. The site has links to examples of presentations, course materials, syllabi, program development, evaluation and assessment of outcomes and collaboration with other institutions.[7]

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This book can also empower patients during their treatment. When asked, many patients report feeling out of control when struggling with fertility.[7] Having this text as a ready resource affords your patients an opportunity to actively participate in their treatment to support their overall health, wellness, and ultimately their fertility potential.

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