

Introducing Integrative East–West Medicine to Medical Students and Residents

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ABSTRACT

Over the last several years, many medical schools and residencies have introduced complementary and alternative medicine (CAM) into their curricula, prompting a discussion as to how CAM should be taught. In this paper, we share our experiences teaching medical trainees integrative East–West medicine, an approach to health and disease that brings together modern Western and Chinese medicine. A 2-week clinical rotation that is intimately tied to our busy clinical program is described in detail as we explore some of the challenges and opportunities involved in teaching a CAM-related field to medical trainees. We also demonstrate how such a clinical experience offers an opportunity to impart on our students a broad view of medicine and to discuss novel approaches to clinical problem-solving.

INTRODUCTION

The increasing popularity of complementary and alternative medicine (CAM) among patients in the last decade has prompted the medical profession to take a closer look at therapies outside the conventional medical system. There has been tremendous growth in the medical literature (Barnes et al., 1999) covering topics such as utilization of CAM by patients (Eisenberg et al., 1998; Wooton and Sparber, 2001), efficacy and mechanisms of CAM therapies (Bensoussan et al., 1998; Cherkin et al., 2001; Stux and Hamerschlag, 2000; Wolf, 1996), physician attitudes toward CAM (Astin et al., 1998; Berman et al., 1995, 1998; Blumberg et al., 1995), insurance coverage of CAM therapies (Pelletier et al., 1997, 1999), and the need for CAM instruction for medical trainees and physicians

(Carlston, 1998; Devries, 1999; Milan et al., 1998; Owen et al., 2001). Despite the fact that most medical schools and some residency programs have introduced CAM courses into their curriculum (Bhattacharya, 2000; Carlston et al., 1997), the offerings are heterogenous (Wetzel et al., 1998). Furthermore, limited academic literature addressing this area of instruction exists. Nevertheless, articles have increasingly begun to characterize how best to teach CAM to allopathically trained physicians, as well as provide guidelines on teaching CAM to residents (Kligler et al., 2000). Several recent articles in *Academic Medicine* addressed the questions of if and how CAM should be taught. Overall, these articles emphasize the need for a consistent educational approach and further development of teaching strategies (Beyerstein, 2001; Cohen, 2000; Grollman, 2001; Marcus, 2001; Straus, 2000).

In this paper, we describe our experiences at the UCLA Center for East–West Medicine teaching a CAM-related field to medical students and residents during an ambulatory medicine rotation. We demonstrate how an outpatient clinic combining Chinese medicine (CM) and conventional medicine is used to teach medical trainees about CAM and medicine in general. We describe how clinically based instruction enhances teaching of CAM and serves as an opportunity to discuss other topics important in medical training such as clinical problem-solving; patient-oriented approaches to chronic and intractable symptoms; and historical, cultural, and economic influences on medicine. As an example of our approach to teaching, we describe in detail a 2-week clinical rotation developed by our faculty for senior medical students and residents, and in its context, discuss the challenges of teaching an alternative medicine field to individuals with prior allopathic training. Aware of the need to develop teaching models for CAM as well as controversies surrounding CAM instruction for medical students and residents, we hope that this paper will contribute to the ongoing debate.

BACKGROUND INFORMATION

The UCLA Center for East–West Medicine was established in 1993 to merge the principles and techniques of CM and conventional medicine in the development of the integrative East–West medical paradigm. The Center's clinic represents an innovative outpatient treatment model in which the two medical systems are integrated within a single clinical environment where acupuncturists and medical doctors work together at all stages of patient care and management. The Center has also been active in educating medical trainees about CAM and integrative East–West medicine. Based in the internal medicine department within a major academic medical institution, the Center's clinic is one of the outpatient sites through which residents and medical students can rotate. Throughout the year, one to six residents spend their 2-week to 1-month outpatient rotation in the Center's clinic. The Center has of-

fered an elective course on integrative East–West medicine to first-year medical students since 1995 and a clinical clerkship to fourth-year medical students and residents since 1997 at the UCLA School of Medicine. The teaching faculty comprises clinical staff (physicians and acupuncturists) and fellows training at the Center. On occasion, experts from other institutions in the United States, China, Canada, or Australia serve as guest lecturers to enrich the students' experience. Because of the integrative, interdisciplinary nature of our approach, the core teaching-faculty is well-versed in both modern Western medicine and CM. The course director (K.K.H.) is a UCLA-trained, board-certified internist, geriatrician, and clinical pharmacologist with extensive knowledge of CM and experience in scientific investigation. In the past, he initiated and served for more than a decade as chairman of a course in clinical pharmacology for fourth-year students and housestaff at UCLA. Both of the Center's staff acupuncturists (J.L.Y. and J.J.L.) have completed formal biomedical clinical and research training in China and have significant experience with academic and research projects.

The cornerstone of the teaching approach utilized by the Center staff is access to an integrative clinic with a unique and large patient population. The Center's clinic has been a busy clinical site with approximately 5000–6000 patient visits per year with most referrals coming from within the UCLA health system. Most patients present with chronic, painful, and/or intractable conditions such as chronic pain, headaches, dysmenorrhea, perimenopausal symptoms, allergies, skin diseases, gastroesophageal reflux, tinnitus, anxiety/depression, and fibromyalgia syndrome. Patients are frequently referred after conventional treatments, including surgery, have failed or because of intolerance of side-effects associated with drug therapy. Once at the Center, patients receive a comprehensive evaluation utilizing biomedical and CM diagnostic methods that results in a diagnosis that includes biomedical as well as CM labels. This initial evaluation is the basis for an integrated treatment plan tailored specifically for the patient's condition. Our approach generally in-

volves a combination of acupuncture, trigger-point injection, therapeutic massage, adjustment of the patient's medication regimen, patient education on the etiology of their condition, nutritional advice, teaching of self-massage of acupressure points and stretching, and lifestyle advice. In most of the Center's teaching activities, patients serve as basis for case discussion, demonstrations, patient interviews and direct clinical experience.

THE DECISION TO FOCUS ON CM

CAM represents a variety of approaches such as chiropractic, massage, Therapeutic Touch, acupuncture, homeopathy, herbal medicine, mind–body techniques, and spirituality/faith healing. We emphasize the unifying themes that they all share throughout the clerkship. However, our clinic and its teaching activities focus specifically on integrating CM and conventional medicine. This decision has been made based on several factors. CM, along with Ayurvedic medicine, is a comprehensive system of medicine complete with its own theories and principles guiding various diagnostic and therapeutic modalities (Hui, 2002). Characterized by more than 2500 years of use and refinement (Cassidy, 2002), CM represents a significant alternative to the conventional biomedical model and continues to be used today by a sizable number of patients, both in the Far East and increasingly here in the West. CM differs from Western medicine in its conceptualization of health and disease through a holistic view of the human body. CM emphasizes the inseparable nature of body–mind–spirit, the centrality of dynamic homeostatic balance, the importance of energetic flow, and self-healing (Hui et al., 2001). It also recognizes the functional and energetic systems of the human body and therefore regards illness as an imbalance in these systems. CM has its own system of diagnostic and therapeutic modalities. Diagnostic modalities distinctly used in CM include tongue and pulse diagnosis, while treatment interventions include acupuncture, Chinese herbal medicine, *tuina*, and *tai chi* and *qigong* exercises with their use guided by the theories of CM. The discipline has become re-

vitalized since the 1950s when the Chinese government embarked on a systematic investigation of its own traditional medicine with the ultimate goal of its integration with modern Western medicine. Over the past four decades, Chinese clinicians and scientists versed in both medical traditions have increasingly applied modern scientific methods to validate or discredit some of CM's principles and test clinical usefulness of CM (Chen, 1995a, 1997). As a result, CM concepts and techniques have been applied in China to treat a wide spectrum of diseases including cancer, vascular diseases, and infections (Chen, 1995a, 1997). The creation of academic institutions dedicated to CM outside of China has also led to the appearance of a new class of health professionals and scientists to sustain the field worldwide. Acupuncture, a CM treatment modality, has been particularly successful in becoming a part of mainstream medicine, in large part because of a favorable political and scientific climate initiated by President Nixon's trip to China in 1972. Widely publicized accounts of acupuncture analgesia at the time sparked scientific investigation of acupuncture in the United States and Europe. This led to a significant body of literature exploring the neurophysiological basis of acupuncture. In 1997, a National Institutes of Health (NIH)-sponsored panel reviewed the available evidence concerning acupuncture efficacy and released a statement supporting its use for nausea and vomiting and several painful conditions (National Institutes of Health, 1998). The consensus statement also supported the continued study of acupuncture as a promising treatment modality for other conditions. With support of the National Center for Complementary and Alternative Medicine (NCCAM), several studies of acupuncture efficacy are under way (NCCAM, 2001).

While acknowledging the importance and diverse contributions of other CAM fields, we believe that (1) the continuing vitality of the CM paradigm; (2) the relative acceptance of acupuncture in mainstream medicine; (3) ongoing research efforts to elucidate mechanisms of all CM treatment modalities; and (4) China's experience with integration make CM a promising candidate for integration with conventional biomedicine in the United States. We

also believe that the teaching of some CM techniques, such as acupuncture, is enhanced when explained in the systematic philosophical framework from which they have evolved. Last, we use comparison of CM and conventional Western medicine to highlight various cultural and philosophical influences in the approach to health and disease.

THE CLINICAL ROTATION

Much of our experience in teaching integrative East–West medicine has evolved through organizing a clinical clerkship for senior medical students and residents. This clerkship, *Introduction to Integrative East–West Medicine*, is a 2-week advanced clinical elective offered to fourth-year medical students and residents. The course is designed to highlight, compare, and contrast key principles of modern Western and Traditional Chinese Medical paradigms and expose students to possible ways of integrating them in clinical practice. The specific learning objectives of the course are listed in Table 1. The 2-week course is a mixture of didactic sessions, case presentations, practical sessions, and observation/participation in the Center's clinic (Table 2). Throughout the clerkship, students are exposed to patients from the UCLA Center for East–West Medicine's clinical program and through case presentations, learn how the integrative East–West approach can be applied in solving clinical problems. In the spring of each academic year, approxi-

mately 15–25 medical students and residents participate in the clerkship. Students and residents rotating through the clinic at other times, obtain similar experience in 2-week or 1-month blocks or longitudinally once per week for 6 to 12 months.

STRATEGIES IN TEACHING INTEGRATIVE EAST–WEST MEDICINE

Because conventional Western medicine and CM have evolved in different cultural and philosophical contexts, CM concepts are foreign to the allopathically trained mind and may appear counterintuitive. Furthermore, most available English texts on CM or integrative East–West medicine are not written for individuals with prior biomedical training and fail to use adequate scientific language. The teaching materials correlating CM and conventional medicine used in China remain untranslated as is most of the modern basic and clinical research conducted there. Because CM has only recently begun to receive more attention from the biomedical community in the United States, the body of original English-language CM literature, especially basic and clinical research studies, is also rather limited. Consequently, when first exposed to CM, many biomedically trained individuals must struggle with the archaic or metaphoric flavor of the medical language and dearth of high quality evidence. During our course, we attempt to overcome these obstacles by (1) addressing the

TABLE 1. SPECIFIC LEARNING OBJECTIVES OF INTRODUCTION TO INTEGRATIVE EAST–WEST MEDICINE

Learning Objectives of the Clinical Clerkship

- Understand the current state of conventional medicine in the larger context of economic, cultural and societal influences and appreciate the rise of CAM use among patients
- Gain a basic understanding of the theory, diagnostic skills, treatment principles and techniques used in CM
- Appreciate the similarities and differences between CM and modern western medicine and recognize their respective strengths and weaknesses in their approach to patient care
- Review and critically assess the currently available database on modern research in CM and integrative East–West medicine
- Learn key acupuncture points and their application in the treatment of medical conditions commonly encountered in clinical practice
- Learn the properties and effects of commonly used herbs and ten herbal formulas as well as their applications in the treatment of common medical problems
- Review basic clinical pharmacology and appreciate the complexity of herbal pharmacology and the possibility of herb–drug interactions
- Learn how integration of aspects of the two systems of medicine can be used to improve patient care

CAM, complementary and alternative medicine; CM, Chinese medicine.

TABLE 2. OVERVIEW OF INTRODUCTION TO INTEGRATIVE EAST–WEST MEDICINE

Content of the Clinical Clerkship
Didactics—40% of instruction time
Sample of lecture topics:
Introduction to Chinese Medicine (CM) and Integrative East–West Medicine
Induction of Disease according to CM
Identification of CM Pathophysiological Patterns and Correlation with Modern Western Medicine/Clinical Knowledge
Five Essential Acupoints: Overview, Location, Function and Discussion of Modern Research
Introduction to Chinese Herbal Medicine: A Clinical Pharmacologist's Perspective
Herbal Toxicity, Adverse Drug Reactions and Herb-Drug Interactions
Integrative East–West Medical Approach to Myofascial Neck Pain and Headaches
Modern Language of Integrative East–West Medicine: Psychoneuroendocrinology, Psychoneuroimmunology and Chronobiology
Case Presentations—20% of instruction time
Patient interviewed by the teaching staff, followed by the discussion of patient history, diagnosis and treatment
Demonstrations/Hands-On—10% of instruction time
Clinical Observation and Direct Patient Contact—15% of instruction time
Student Presentations—15% of instruction time
Sample student presentations:
Subclinical Hyperthyroidism: A Case Study
Treating Drug Addiction with Acupuncture
Applications of Chinese Medicine to Management of human immunodeficiency virus (HIV)-Related Disease
Integrative East–West Medical Approach to Bone Fracture

medical paradigm differences; (2) using modern scientific language to explain key concepts; (3) citing whenever possible high-quality scientific research data on CM correlating it with modern Western medicine; and (4) utilizing our clinic for patient exposure and experiential learning.

Paradigm differences are addressed early on in the clerkship and serve as a heuristic tool to discuss general approaches to medical thinking. For example, conventional biomedicine is generalized as linear and reductionistic while CM as circular and systemic. While these generalizations are somewhat oversimplified, we use them to discuss advantages and disadvantages of each perspective and show how utilizing both might enable clinicians to have more tools to help improve patient care. Our faculty draws correlations between CM and prior modern medical knowledge that the students and residents have acquired to overcome the CM conceptual and language difficulties. For example, *yin-yang* and Five Phases theory is explained in terms of the regulatory and dynamic feedback mechanisms in various physiological systems such as the autonomic, immune, and neuroendocrine systems. In the discussion of the CM concept of Blood Stasis, we critically review modern research done in

China, correlating this pathophysiological state and objective measures of changes in hemodynamic, microcirculatory, and hemorrheological indices (Chen, 1995b). In discussing the role of nitric oxide in human physiology, the insulin-resistance syndrome, psychoneuroimmunology, and the systemic inflammatory response syndrome faculty draw correlations between the systemic approach to pathophysiology and CM pattern diagnosis. We discuss some of the innovative approaches to studying acupuncture, such as using functional magnetic resonance imaging (fMRI) (Hui et al., 2000) and review the literature regarding the neurochemical basis of acupuncture along with an overview of mechanisms of pain and cardiovascular regulation (Han, 1997; Mayer, 2000; Middlekauff et al., 2001; Stux and Hamerschlag, 2000; Ulett et al., 1998). In teaching Chinese massage (*tuina*), a type of bodywork therapy, we have the trainees experience it first-hand before applying it to patients. They are also introduced to the limited, but increasing research data showing benefits from therapeutic massage for a spectrum of conditions such as lower back pain, chronic fatigue syndrome, asthma in children, fibromyalgia syndrome, depression, anxiety, postmastectomy, lymphedema, and inflammatory bowel disease

(American Massage Therapy Association, 1999; Cherkin, et al., 2001; Ernst, 1999). In discussion of herbs, we review the clinical efficacy of herbs, the relationship of herbs to modern drug development and therapy, the problem of quality control, the difficulty of scientific investigation of crude mixtures, the pharmacologic and toxicologic basis of herbs and potential interactions with modern drugs (Bensky and Barolet, 1993; Bensoussan et al., 1998; Fugh-Berman, 2000; Hui, 1999; Mathews et al., 1999). Through the example of *Ephedra sinica*, we show how a potentially toxic herb (Haller and Benowitz, 2000) is used in CM and how CM therapeutic guidelines minimize toxicity through CM pattern diagnosis, appropriate preparation, dose adjustment, treatment duration, and combinations with other herbs to counteract side-effects.

Intimately tied to a busy clinical program, the clerkship emphasizes clinical learning and exposure to the one thing that CM and modern Western medicine do have in common—the patient. During the clerkship, selected patients meet with the students and share their medical histories, including the number and types of conventional physicians they had seen as well as any diagnostic procedures or therapies they received. This summary of the conventional approach is then followed by a discussion of the diagnosis and treatment of the patient from the perspective of CM. We show students how the CM approach may unite seemingly disparate symptoms and signs, often elicited from the patient on review of systems. Special emphasis is placed on those aspects of diagnosis not usually used by conventional physicians (e.g., tongue inspection, trigger and acupoint examination), and certain questions asked during elicitation of the history (e.g., taste preferences). Through discussion of patient cases managed in the clinic, students are able to see that CM is able to provide a diagnosis and possible treatment in situations where conventional work-up and management are elusive. Furthermore, students are exposed to the potential benefits of integrative medicine. For instance, CM is used to guide the aggressiveness of Western medical diagnostic work-up and to provide treatment allowing the avoidance of intolerable side-effects of potent medications and unnecessary surgeries and procedures. We thus invite the students to be-

gin thinking about the potential of incorporating CM into their biomedical framework and show them how the two healing traditions might be integrated in clinical practice (Hui, 2001). Students are introduced to a medical approach that enhances patient wellness, prevents disease, and strengthens the physician–patient relationship by enlisting the patient as an integral part in his or her self-healing.

Students engage in experiential learning through demonstrations and hands-on practice. The students observe the staff acupuncturists perform therapeutic massage and acupuncture on students volunteers. They also participate in a practical session on acupuncture during which they develop skills of identifying and needling a few basic acupuncture points. When learning about Chinese herbal medicine, the students can “touch and smell” preparations of commonly used herbs and later visit a local CM practitioner's herbal store. Lastly, the students have a chance to participate in daily CM relaxation/rebalancing techniques such as *t'ai chi* and *qigong*. We also show the students studies discussing the beneficial role of Tai Chi in reducing falls in the elderly (Wolf, 1996).

Our faculty recognizes that there is controversy relating to CAM education, with respect to definitions, research methodologies, and even the legitimacy of particular therapies (Berman, 2001; Beyerstein, 2001; Cohen, 2000; Knipschild, 2000; Marcus, 2001; Sampson, 2000, 2001). While we do not claim to be neutral in our view of CM, we agree that scientific rigor and professional integrity should be reflected in teaching CAM. In our course, we identify our favorable view of integrative East–West medicine but discuss critical thinking skills and encourage students to evaluate the available database of knowledge for themselves. In addition to available scientific evidence, we include presentations and articles on controversies in CAM and CM research methodology as well as the placebo phenomenon and its implications for clinical research and therapeutics. We also discuss economic, legal, ethical, and practical aspects of integrating CAM into conventional western medicine (Cohen, 1998; Faass, 2001). Students are frequently asked to share their response to the presented material with the rest of the class and are encouraged to

query and challenge the faculty at all times. Students realize that there is a spectrum of responses to CM among their peers, ranging from skepticism to uncritical fascination.

TEACHING OUTCOMES

Students are asked to research and prepare a topic of their choice in integrative East-West medicine for presentation to the rest of the class and the faculty on the last day of the course. Together with class participation, these presentations are the basis for final clerkship grading. Students complete an anonymous evaluation assessing the quality of each instructor and the clerkship components. The students also are asked to assess their achievement of the individual learning objectives. Because the evaluation format has been progressively improved throughout the years, a formal analysis of the results is not feasible. Overall, the evaluations indicate that most students come away with: (1) a better appreciation of health and disease in general; (2) an enhanced perspective on biomedical and CAM approaches to treatment; (3) some basic knowledge of the philosophy and theoretical underpinnings of CM; (4) appreciation of research evidence available on CM as well as critical assessment of its validity; (5) an initial exposure to the conceptual framework and scientific basis of integrative East-West medicine; (6) appreciation of how CM can be integrated into conventional medical system in a useful, safe, and cost-effective manner; and (7) knowledge of a few basic, wellness-promoting clinical skills. A number of students who completed the course prior to graduation from medical school have come back as internal medicine residents for further training and to seek collaborative opportunities with us. One student from the first version of the clerkship went on to complete his internal medicine residency as well as formal training in CM and has now joined the Center as full-time faculty.

SUMMARY

There is a growing recognition that CAM instruction is an important and needed aspect of medical education. By 1997, more than 60% of

U.S. medical schools offered CAM instruction to their students in the form of elective courses or core curriculum lectures (Bhattacharya, 2000; Wetzel et al., 1998). Similarly, there has been an explosion of educational offerings for postgraduate trainees and practicing clinicians (Berman et al., 1998; Blumberg et al., 1995). The Society for Teachers of Family Medicine has recently issued curriculum guidelines on CAM for family medicine residents (Kligler et al., 2000). A general internal medicine residency program affiliated with Brown University School of Medicine (Milan et al., 1998) has incorporated CAM education into the curriculum, and there is a postgraduate fellowship in integrative medicine offered by institutions such as the University of Arizona and our Center at UCLA.

In this paper, we describe the teaching approach that we have developed in the context of a clinical clerkship. We believe that access to a busy clinical program, clear educational objectives, structured delivery of the course, adjustment of content to account for allopathic background of the students, and dual-trained faculty are the strengths of our teaching. The clinic serves as a real-life example of how CAM and modern Western medicine can be integrated and offers the medical trainees a view of new approaches to patient care. By comparing and contrasting the two medical paradigms, students also learn about the historical, cultural and philosophical influences on medicine. Discussion of the increasing popularity of CAM serves as a springboard to address economic and cultural shifts within modern medicine and emphasizes medicine's intricate ties to the rest of society. The clerkship differs from other CAM courses in that it focuses on CM and integrative East-West medicine while exposure to other CAM therapies is largely omitted. As a clinical clerkship, this approach to teaching CAM is likely to complement other CAM instruction and highlights the awareness of different teaching models that can be utilized to introduce CAM to medical trainees. Different teaching guidelines and evaluation methods will need to be developed for the various modes of teaching (lectures versus clinical rotation; required versus elective course). Further discussion of CAM instruction is warranted. Overall, we believe that thoughtful CAM in-

struction, especially one enhanced by a clinical component, can offer a unique venue to enhance open-mindedness and promote deeper understanding of medicine and clinical principles.

ACKNOWLEDGMENTS

We would like to thank the Balm Foundation and the Gerald Oppenheimer Family Foundation for their support of our teaching program. We would also like to thank George Ellison, M.D., Sherman Mellinkoff, M.D., Steven Tan, M.D., Neil Wenger, M.D., Michael Wilkes, M.D., Sherman Mellinkoff, M.D. for their constructive comments of our manuscript. We would like to acknowledge Regina R. Chinsio, B.S., Mai K. Ho, B.S., B.A., George Hsui, B.S., and Anna Wang, B.S. for their significant contributions.

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