Integrative Medical Education: Development and Implementation of a Comprehensive Curriculum at the University of Arizona

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ABSTRACT

Dissatisfaction with the U.S. health care system is increasing despite impressive technologic advances. This dissatisfaction is one factor that has led patients to seek out complementary and alternative medicine (CAM) and led medical schools to start teaching CAM. This paper focuses on the University of Arizona's approach to developing and implementing a comprehensive curriculum in integrative medicine. Integrative medicine is defined much more broadly than CAM. It is healing-oriented medicine that reemphasizes the relationship between patient and physician, and integrates the best of complementary and alternative medicine with the best of conventional medicine.

Since its inception in 1996, the Program in Integrative Medicine (PIM) has grown to include a two-year residential fellowship that educates four fellows each year, a distance learning associate fellowship that educates 50 physicians each year, medical student and resident rotations, continuing medical and professional education, an NIH-supported research department, and an active outreach program to facilitate the international development of integrative medicine. The paper describes the PIM curriculum, educational programs, clinical education, goals, and results. Future strategies for assessing competency and credentialing professionals are suggested.

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It is more important to know what patient has a disease, than what disease the patient has.

—WILLIAM OSLER (1849–1919)[1]

William Osler is considered one of the fathers of American medicine, yet medicine appears to have strayed far from his teaching. Managed care, the development of clinical practice guidelines, and evidence-based medicine have enhanced clinical medicine and have undermined Osler's call to know the human being experiencing the disease. The lesser-attended-to art of medicine now calls for attention.

The success of high-technology medicine has been coupled with a neglect of self-care and holism. Technologic solutions, while sometimes miraculous, are not always effective or available, and come at such a high price as to be unavailable to the majority of our planet's population. But even when accessible, these technologic solutions run the risk of making the individual undergoing treatment feel like a widget rather than a whole person complete with the feelings, relationships, and social situations that contribute to his or her illness.

For these and related reasons, North American patients and doctors are increasingly dissatisfied with the Western medical system. The medical community was stunned by Eisenberg's first survey of the use of complementary and alternative medicine (CAM),[2] which revealed that 34% of adults in the United States had used at least one unconventional form of health care in the previous year. Follow-up surveys

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have revealed increasing use of CAM.[3] Consumer dissatisfaction is clearly one factor contributing to the use of CAM,[4–14] although another important factor appears to be attraction to a holistic philosophy of health that asks practitioners to recognize the interconnectedness of body, mind, and spirit.[15]

Physicians' dissatisfaction is harder to quantify.[16–18] Applications to medical schools are said to be down, primary care specialties are struggling to fill their slots as—among other reasons—anesthesia, dermatology, and interventional radiology become more desirable. Greater numbers of physicians are now taking early retirement and contacting headhunters for career changes.

Academic institutions are responding to consumers' interest in CAM and physicians' dissatisfaction with the current system in a number of ways. Most medical schools in the United States and Canada now offer lectures in holistic medicine or CAM.[19,20] Postgraduate CAM conferences are offered by eminent universities such as Harvard, Stanford, and Columbia, with brochures advertising new courses in CAM appearing monthly. Guidelines for including CAM in residency curricula have been suggested by the Society for Teachers of Family Medicine,[21] and the Association of American Medical Colleges has formed a special-interest group in CAM. For the past two years the National Institutes of Health (NIH) has offered institutions five-year grants to develop curricula in CAM.

Courses in CAM are one piece of the answer. CAM can introduce new paradigms for conventionally trained physicians. This knowledge helps us recognize that the biomedical model is only one of a number of ways of looking at health and disease. While we may not fully understand the underpinnings of alternative systems of health, they offer useful perspectives and deserve further study. For example, the Chinese medical system's use of moxibustion to turn a breech baby does not fit within our Western paradigm.[22] The possibility that distance healing may be shown to be significant in randomized double-blind controlled trials is especially challenging,[23–25] although the methods have been disputed.[26] Be that as it may, CAM can assist the physician in taking a holistic approach and may offer treatment strategies in areas in which conventional medicine has limited success. (The Ornish program, an integrative strategy including group support, meditation, exercise, and a diet containing less than 10% fat, has been shown to be a treatment of this type with coronary heart disease.[27]) The addition of proven CAM to conventional medicine would be an improvement, yet this combination alone is not what could be defined as integrative medicine.[28]

The purpose of this article is to describe the University of Arizona College of Medicine's innovative response to these challenges. The Program in Integrative Medicine (PIM) is a new model of medical education. PIM's goals are to define, develop, implement, model, and evaluate excellent integrative medicine educational programs.[29] *Integrative medicine* is defined as healing-oriented medicine that reemphasizes the relationship between patient and physician, and integrates the best of complementary and alternative medicine with the best of conventional medicine. We believe that this synthesis of humanistic medicine, patient- and relationship-centered care, preventive health, allopathy, and CAM is the model for creating an improved system of health care.

Since its inception in 1996, PIM has grown to include a two-year fellowship that educates four fellows each year, a distributed learning associate fellowship that educates 50 physicians each year, education for medical students and residents, continuing medical and professional education, an NIH-supported research department, and an active outreach to facilitate the international development of integrative medicine.

DEVELOPMENT OF THE CURRICULUM

In a manner similar to that used in the field of psychiatry to develop *Mental Disorders: Diagnostic and Statistical Manual* (DSM),[30] one of us (AW) assembled an expert panel in 1994. National leaders in alternative medicine* met for two days of dialogue from which the scope of content and experiences to be included in an integrative medicine curriculum were determined. From this expert panel's recommendations, the initial curriculum for the program was created. Changes and refinements to the curriculum have now been worked out over four residential fellowship classes and in its newest iteration as an online curriculum in our associate fellowship. Input to the curriculum has come from physicians, nurses, psychologists, educators, and CAM practitioners from around the nation. The curriculum committee at PIM has the final responsibility for amending content.

It is beyond the scope of this article to cite all of the evidence supporting an integrative medicine curriculum. Although not complete, the body of evidence continues to grow, as does the prominence of journals in which it is published. The National Center for Complementary and Alternative Medicine (NCCAM) site offers an extensive bibliography of published articles.[31] Theme issues have been published on CAM and integrative medicine, beginning with *JAMA*[32] and the *American Medical Association Archives* in 1998,[33] followed by the *Western Journal of Medicine* in 1999[29] and the *British Medical Journal* in 2001.[34] Also, in

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1999 the *British Medical Journal* ran the ABC's of CAM, and in 2001 the *Annals of Internal Medicine* ran a series of articles. In addition to this issue of *Academic Medicine*, upcoming theme issues are planned in *Pediatrics*, the *American Journal of Public Health*, and *Clinics in Family Practice*.

THE PROGRAM IN INTEGRATIVE MEDICINE

The Residential Fellowship

Four physicians are selected each year to participate in the two-year residential fellowship. The selection process is competitive, with up to 80 physicians in each applicant pool. Fellows are board certified and have none to ten years (an average of six years) of clinical experience, post-residency, on entering. Fellows have come from family practice (eight), internal medicine (seven), emergency medicine (two), obstetrics and gynecology (one), and radiology with additional primary care training (one). Fellows matriculate through the graduate medical education offices of the University of Arizona. Clinical care of patients takes place in the Department of Medicine's outpatient clinic.

Implementation of the curriculum in the fellowship is a nonlinear process. The curriculum is divided into three didactic and four process sections. The didactic sections include philosophical foundations, lifestyle practices, and therapeutic systems and modalities. The process sections include clinical integration, personal development and reflection, research education, and leadership. See Chart 1 for a brief overview of the curriculum and its seven sections.

The philosophical foundation's curriculum asks physicians to explore their beliefs about medicine and the role of the physician. For example, Kuhn's theories of paradigm shift[35] and Popper's falsifiability theory[36] expose physicians to the assumptions that underlie medical science. The shift from a disease focus to a healing approach requires a shift in orientation and way of being. Instruction in the art of medicine prepares physicians for new roles as partner, coach, teacher, motivator, and healer. Discussions of medicine and culture heighten awareness of the different cultural healing systems and the history of their use.

The section on lifestyle practices prepares physicians for the increased focus on prevention and health promotion. Extensive training is offered in nutrition, mind–body medicine, spirituality and medicine, and physical activity. Fellows are instructed in Chinese medicine, energy medicine, homeopathy, allopathic medicine, manual medicine, and Western herbalism; comprehensive training in alternative medical systems is beyond the scope of a two-year fellowship. In their second year of training, fellows choose to focus on clinical, research, or administrative training. Clinical fellows are encouraged to select an alternative system of medicine for additional training in their second year.

Physician Self-care

In addition to drawing on the contributions of established fields, integrative medicine education in PIM emphasizes experiences less common in conventional medical training, including a focus on personal physician experience and self-care. Fellows are encouraged to experience for themselves the modalities they recommend to their patients. Financial resources and time are provided. Time is also allotted for regular exercise, and healthy nutrition is taught in an experiential manner that places value on incorporating the concepts into the lives of the physicians and their families as well as their patients. Therapeutic movement is woven into the curriculum and alternates between yoga, tai chi, and qi gong.

Building upon the successful introduction of Balint and support groups in medical training programs,[37,38] a reflection process that fosters self-awareness is central to the education offered by PIM. In facilitated sessions, fellows examine their humanity, including the identities they have left behind and the physician–healers they are seeking to become. These meetings occur regularly, often offsite, and in addition to traditional group work, include experiences ranging from listening to music, hiking, and reading plays and poetry to participating in Sufi dancing and sweat-lodge ceremonies.

The healing process that our patients undergo is mirrored by the fellows' undergoing their training. Fellows report that they come out of the experience changed. In exploring their own humanity, they may discover emotional wounds and have the opportunity to begin a healing process. They become more comfortable living with uncertainty and are more willing to partner with patients to bring about an understanding that healing originates in the patient. The process is often challenging. There may be a disassembling of identity before a new identity emerges. "Family physician," "internist," and "emergency doctor" become less true descriptors, yet "integrative medicine physician" is not as clearly defined as those old descriptors once were.

Clinical Integration

Putting theory into practice. Providing clinical care provides the fellows the opportunity to put the theory they have learned into practice. For most fellows it is in the clinical setting that the theoretical knowledge is tested by the opportunity to practice a different kind of medicine. Fellows seek to develop authentic relationships with patients, in which the life experiences and knowledge of both participants are acknowledged and respected.[39] Listening skills, interaction skills, and motivational skills are highly valued. The boundaries of the professional relationship are examined, and a closer and perhaps more effective relationship may emerge.[40]

Philosophical Foundations
Shifts the orientation from a disease-oriented model to a healing-oriented model. Practitioners are asked to confront their own worldviews and to face the uncertainty of not knowing.

Healing-oriented Medicine
To understand: the nature of the body's healing system; case studies of spontaneous healing; the placebo response as a therapeutic ally; lifestyle medicine; healing versus curing; and strategies for protecting, enhancing, and activating the healing system

Philosophy of Science
To understand the history, philosophy, and limitations of the modern scientific method and enterprise

Medicine and Culture
To provide historical and anthropological perspectives on health belief models and healing systems of different cultures

Art of Medicine
To explore: the doctor as a facilitator of healing; effective communication and the art of suggestion; relationship-centered care; the role of intuition; techniques for motivating behavioral change; and matching therapeutic approaches

Lifestyle Practices
How we live our lives clearly affects our health and disease. Lifestyle practices and prevention are central to this approach.

Spirituality and Medicine
To explore and experience the role of spirituality in oneself, the patient, and the healing relationship

Mind–Body Medicine
To explore the breadth and mechanics of mind–body interactions, appreciate a broad range of applied interventions, and learn how to use a variety of mind–body interventions in clinical care

Nutritional Medicine
To understand the central role of nutrition in healing; to provide a scientific basis for the integration of nutrition in medicine, in order to practice preventative and therapeutic nutrition

Physical Activity
To learn benefits of physical activity, how to prescribe exercise and enhance self-practice

Therapeutic Systems and Modalities
Explores the distinction between alternative and integrative medicine; the history of CAM; the history, underlying philosophies, scientific basis, and practical applications of various systems of medicine; and the scientific evidence as it pertains to these systems.

Botanical Medicine
To understand the philosophy, science, safety, efficacy, and use of botanicals in integrative medicine

Manual Medicine
To understand the philosophy and scope of manual medicine

Chinese Medicine
To develop a general understanding of the principles, safety, and efficacy of Traditional Chinese Medicine (TCM) and related therapeutic approaches

Homeopathy
To understand the philosophy and scope of homeopathic medicine

Energy Medicine
To provide an introduction to the theories, research, and techniques of energy medicine and show how the concept of energy is a fundamental component of integrative medicine

Allopathic Medicine
To understand the history, philosophy, scientific basis, and practice of allopathic medicine, including preventing illness through medical screening, patient education, and lifestyle modification

Personal Development and Reflection
To develop in physicians processes of self-exploration and personal growth, to transform themselves from doctors to healers.

Clinical Integration
To integrate various medical systems, therapies, and modalities into comprehensive treatment plans for individual patients.

Research Education
To develop skills in evaluating medical literature, developing research designs, and contributing to scholarly publications.

Leadership
To obtain a comprehensive overview and gain practical skills in leading and managing their roles in the academic, political, administrative, advocacy, and personal commitment aspects of integrative medicine.

Chart 1. Curriculum in integrative medicine of the Program in Integrative Medicine, University of Arizona College of Medicine, 2002.

The Program in Integrative Medicine builds on the experience of other successful educational and professional programs that have sought to elevate the importance of humanism in medicine. As in family practice and psychiatry,[41,42] the utmost attention is placed on developing a highly therapeutic doctor–patient relationship. The tools developed in behavioral medicine and health psychology, which focus on improving self-care and self-efficacy, are drawn upon liberally.

In integrative medicine as taught in PIM, we seek to understand the origins of an illness with the hope of sorting out how physician and patient may be able to change that illness's course.[43] We do this in a number of ways. We listen carefully to what is said and what is left unsaid. We seek to discern the origins of the disease—genetic, physical, emotional, psychological, or spiritual. And we seek to promote a healing response. We use our intuition, the literature, and expert advice in service to the patient and the healing process.

Patients are seen in the University Medical Center's outpatient internal medicine clinic in rooms renovated to create a healing environment. Colors, artwork, furniture, indirect lighting, and music contribute. Patients come primarily by self-referral, and increasingly are also referred by physicians at the University of Arizona College of Medicine and in the community. The initial visit is 60–90 minutes in length. Fellows may begin the interview with a statement such as "My goal is to get a sense of who you are as a person, to understand the important relationships and events in your life in addition to the medical condition that brings you in today."

Patient conference. After the consultation fellows perform a literature search and then present the patient and the issues they are dealing with at a multidisciplinary patient-care conference. This weekly meeting is precepted by practitioners of Chinese medicine, naturopathy, osteopathy, homeopathy, and energy medicine, a mind–body psychologist, a spiritual counselor, a nutritionist, and a pharmacist, in addition to physicians trained in family medicine, general practice, internal medicine, psychiatry, environmental medicine, and geriatrics.

Patients are presented in a holistic fashion. The typical "this is a 49-year-old woman with a two-year history of diabetes mellitus" does not capture the essence of the human being in a fashion that allows a spiritual provider, homeopath, or Chinese medicine practitioner to give input. Instead, a fellow might begin

> Sandra Smith is a 50-year-old woman who says she wants "her body to catch up with her mind." This is how she describes her lifelong struggle with her weight. Sandra is quick-witted, energetic, a loving wife, a good friend, and mother of four teenaged children. She admits that she is a perfectionist in everything she does. She comes to integrative medicine to explore a comprehensive approach to managing her diabetes.

Thus, the fellow attempts to capture the nature of the patient for the group. The description goes on with a thorough medical and psychosocial history.

The patient conference is a critical part of the clinical training. The dialogues lead to a deeper understanding of the worldviews of various practitioners. A broader set of questions is developed and practiced as a result of input from the various practitioners. Over time, clarity as to which system is good for which patient or condition grows. Fellows discover situations in which complex symptoms cannot fit together from a Western perspective yet, for example, neatly fit into a Chinese medical diagnosis.

An atmosphere of active dialogue and questioning is encouraged during patient conferences. Input from the preceptors is then tailored into a treatment plan. In partnership, physician and patient determine the course of action. Integration is ultimately in the hands of the patient. Follow-up visits with fellows tailor the course of care.

Our goal in PIM is to continually refine how we practice integrative medicine. We also seek to deepen our understanding of healing. Individuals who have had remarkable recoveries often take very different routes.[44] The mystery of healing is borne out in research that reveals that the strongest predictor of mortality is not necessarily the results of lab tests or physician assessment but rather the patient's own self-rated health status.[45] What can we learn from remarkable patients? Are there commonalities? What can we rationally advise our patients? These are some of the questions that we wrestle with.

Fellowship Outcomes

The purpose of the fellowship is to develop leaders who will continue to influence the field of integrative medicine in particular and medicine in general. Leadership training prepares fellows for their future roles as directors, public speakers, and researchers. Although our program is quite young, we are showing the promise of success. Eight of twelve graduates have taken positions in academic medicine. They are developing new integrative medicine programs, performing research, and developing curriculum. Two others are working with health systems to develop new models of integrative clinical care. Graduates are likely to affect the field with their writings. One graduate has published and two others have book contracts for integrative medicine texts.[46–48] Collectively they have published numerous articles that have helped define the field. They are sought after as speakers at conferences. A new integrative medicine fellowship model is in development by another graduate.

The Associate Fellowship Program

Our Associate Fellowship Program provides an innovative two-year learning experience whose purpose is to train physicians in the clinical practice of integrative medicine. It grew out of a request from the physicians who attended our continuing medical education programs. They asked for more advanced training in integrative medicine that would not draw them away from their practices and their communities. These physicians could not make the sacrifice of moving to Tucson for two years at a fellow's salary, were not necessarily interesting in leadership roles, yet they were committed to practicing integrative medicine clinically. Adapting the residential fellowship curriculum to a distributed learning format created the associate fellowship. Three weeks of residential programming in Tucson are spread over the two years so that associate fellows can learn and practice skills together, meet and collaborate with faculty and residential fellows in person, and build a sense of community. Associate fellows spend eight to ten hours per week in study, totaling approximately 1,000 hours of instruction over the two-year program.

Physicians in the associate fellowship learn about the philosophy, practice, and integration of care through an interactive delivery model. Learning methods include

- reading texts, printed materials, and peer-reviewed journal articles;
- engaging in interactive exercises on the Internet site;
- participating in threaded dialogues (i.e., asynchronous discussions over the Internet) with faculty, CAM experts, practitioners, and other associate fellows;
- completing case studies and clinical scenarios modeled after the PIM patient conference; and
- conducting field trips, interviews, and other activities that emphasize integration of the learning into their personal lives as well as into their practices.

By integrating the learning with practical application, opportunities are consistently presented to challenge associate fellows' beliefs and behaviors and help them make resolutions for change. Associate fellows are encouraged to seek out new knowledge and to address their beliefs about medicine and their roles as healers.

We currently have 91 physicians and one nurse practitioner enrolled in two associate fellowship classes. The associate fellows are extremely diverse. They represent medical specialties varying from internal medicine to family practice, pediatrics, obstetrics–gynecology, otolaryngology, radiation oncology, and pathology. Some are full professors and residency directors in academic health centers; others practice in large health maintenance organizations and small private practices.

Although this program has not yet graduated any physicians, already we are seeing remarkable results. One year into the associate fellowship, half of the fellows described making marked changes in their professional lives. Furthermore, there has been no attrition—remarkable for distance-learning programs, which typically have rates of attrition up to 50%.

MEDICAL STUDENTS' AND RESIDENTS' EXPERIENCES AT THE UNIVERSITY OF ARIZONA

Requirements

The University of Arizona has been a pioneer in CAM education, with required lectures offered continuously since 1975. The College of Medicine has eight hours of required instruction in integrative medicine. These include four hours of lectures in the social and behavioral science course and a third-year, four-hour interdisciplinary seminar in integrative medicine. The goal of this instruction is to introduce students to the philosophical underpinnings of integrative medicine and the controversy surrounding it; to enhance critical thinking skills; to allow students to experience alternative modalities; and to explore the evidence for and against an integrative medicine approach. All students are invited to attend the PIM patient conference.

Electives

Electives offered by PIM include a first- and second-year lunchtime series of lectures and a fourth-year elective. The first- and second-year elective course, offered since 1983, has 50 students enrolled. A fourth-year medical student and resident rotation has been offered by PIM since 1997. This four-week elective is in great demand, with a waiting list for each slot. Priority is given to University of Arizona students; open slots are quickly filled by students from around the country. Whenever feasible, medical students and residents are integrated into PIM activities and classes. Experiences include shadowing fellows and faculty in the integrative medicine clinic, attending patient conference and lectures, completing a structured list of readings, attending journal club, and visiting a wide range of CAM providers. Students and residents are strongly encouraged to explore their self-care practices. Students spend time with a nutritionist, do yoga and meditate, and are physically active. Each student gives an oral presentation on integrative medicine subjects, relevant to his or her future practice, to the fellows and faculty. The evaluations of the program have been consistently positive. Unsolicited letters by students upon comple-

tion of the elective include comments such as: "It was the highlight of medical school for me and I am extremely grateful." Over 100 students and residents have completed the one-month rotation.

Graduate Training

In addition to the resident elective, lectures and grand rounds have been offered in family and community medicine, medicine, rheumatology, pediatrics, obstetrics and gynecology, surgery, and anesthesiology.

Postgraduate Training

In addition to the two fellowships, a series of lectures, four-hour teleconferences, day-long programs, week-long conferences, and collaborative conferences with the Universities of Minnesota, Duke, and Columbia have been offered by PIM. These programs provide continuing medical education credit. PIM has also undertaken the training of five pediatrics research fellows in integrative medicine who are funded by the P50 NCCAM grant for study of CAM in pediatrics.

RESEARCH AT PIM

We are concerned that much current research in CAM appears to be reductionistic, focusing on single modalities, often isolated from the philosophical and diagnostic systems in which they originated. This approach does not reflect the systems thinking that is at the core of integrative medicine. Rather than examining isolated therapies, we see the need to study healing and the complex mix of treatments most patients use. Effectiveness research needs to examine multidimensional outcomes in response to multifaceted intervention programs as used clinically.[28]

Our research goals are to contribute rigorous scientific research on the mechanisms of integration in integrative medicine and the optimization of educational programs on integrative medicine for physicians, students, and allied health professionals. Our approach is to apply systems theory in studying change at macro (clinical education for physicians) and micro (clinical care for individual patients by specific providers) levels of organization.

As a starting point, we are emphasizing observational study designs[49] that inherently accommodate (1) the multifactorial nature of integrative medicine as practiced and (2) the development and adaptation of multidimensional outcome measures that capture spiritual–mental–emotional–physical changes during treatment.[50] In keeping with the wellness focus of integrative medicine, we use scales with the capacity to capture positive as well as negative elements of healing, e.g., the Positive and Negative Affect Scale,[51] and to assess broad quality-of-life domains beyond those related to disease, e.g., Patrick's Quality of Life Scale.[52] In order to understand patients' experiences of their health problems, their decision-making processes in choosing treatment programs, and their changes during treatment, we are also applying qualitative research methods.[53]

NATIONAL AND INTERNATIONAL OUTREACH

The Program in Integrative Medicine has contributed to the effort to advance the field of integrative medicine nationally and internationally. The strategies have included presentations and keynote addresses, placing graduates in academic institutions, and collaboration with other institutions. The Consortium of Academic Health Centers for Integrative Medicine† (CAHCIM) is a key effort. CAHCIM consists of 11 medical schools with active programs in CAM and integrative medicine; the consortium has dean-level support. CAHCIM's goals are to incorporate integrative medicine education into medical school and residency curricula, to influence the National Board of Medical Examiners to include questions on CAM and integrative medicine, and to be an active group influencing policy.

PIM'S GOALS AND CHALLENGES

The Program in Integrative Medicine endeavors to address many of the deficiencies in the current medical education system while modeling a different learning culture. Thus, curricular areas including nutrition, mind-body medicine, spirituality, and alternative health systems are coupled with addressing physician self-care. Validation of this educational model has not yet taken place and is necessary. PIM seeks to model how to remedy gaps in physicians' training; it remains to be determined which aspects of the PIM curriculum fit best into undergraduate medical education versus graduate, postgraduate, and ongoing professional education. Adding to the curricula of undergraduate or graduate medical education presents another challenge. Even when there is agreement on the need for education, barriers include limited resources (e.g., time, money, and faculty), student and faculty resistance, and a lack of continuity among courses.[54]

Outcomes research investigating the type of clinical care provided by integrative medicine is in its infancy. Studying integrative care is costly, time-consuming, and methodologically challenging. Whereas integrative medicine looks for evidence upon which to base clinical recommendations, to date there is a dearth of evidence in many areas. Given a

†Medical schools include Albert Einstein, Duke, Georgetown, Harvard, Jefferson, Stanford, Universities of Arizona, California at San Francisco, Massachusetts, Maryland, Minnesota.

Western "scientific" perspective that demands randomized controlled trial evidence, there is little evidence for integrative health care. If one considers evidence from the thousands of years of traditional use of medical systems such as Chinese medicine and Ayurveda, the body of evidence grows substantially. Many of our patients have simply failed to receive help from the conventional approach (or have been failed by that approach). They seek our guidance to rationally explore alternatives. Others are attracted to the holistic, more natural, approach of integrative medicine or desire the kind of partnership with a physician that can seldom be found in conventional medicine.

Our model of care does not neatly fit into the practice models at the university. Scheduling, coding, and patient flow are all challenging issues to be addressed. The current payment systems do not support either the time spent with patients or many of the alternative modalities; this leads to the risk of creating a two-tier health system in which the affluent have choices not shared by those less well off.

We have faced financial challenges in developing this new model of education. Education does not inherently pay for itself. Our residential fellowship and medical student and resident rotations are not exceptions. These programmatic efforts have been funded primarily through philanthropic support. (Our associate fellowship model will be self-supporting after initial development.)

Bridging different perspectives of health and illness is another challenge. While many practices provide CAM and conventional care alongside one another, we promote the value of integration. CAM practitioners and academic faculty often have different perspectives; our goal is to create a setting in which they can work comfortably together. The patient conference has served an important function in this endeavor. We invite guests from the allopathic, CAM, lay public, and policy worlds to our patient conferences. Uniformly, visitors are touched by the depth and compassion, the range of treatment options, and the healing intention manifested.

THE FUTURE

While our educational offers thus far have ranged from one-hour lectures to a two-year fulltime fellowship, our primary focus has been on a comprehensive education in integrative medicine. As a program our goal is to continue developing innovative and transforming educational opportunities. We are developing an undergraduate course in integrative medicine at the University of Arizona. We are exploring shorter fellowships and a national combined residency fellowship model in primary care and integrative medicine.

We expect all integrative medicine clinicians to develop competency in the areas of nutrition, mind–body medicine, spirituality and medicine, botanical medicine, the doctor–patient relationship, and physician wellness. We recognize different levels of competency. The lowest is achieved by the physician who has familiarity with or knowledge about a system or modality that leads to competent referrals—which patients are most appropriate for a referral to a homeopath, osteopath, or Chinese medicine practitioner. In the middle would be the ability to practice modalities in some situations, such as using strain–counterstrain manipulation for trapezius spasm or using homeopathic first-aid remedies. The highest level of competency would be expertise or the ability to treat complex patients and most conditions.

For clinicians who develop areas of clinical expertise in CAM, a variety of assessment tools are available. Some CAM skills have accredited programs such as the Biofeedback Certification Institute of America, American Society of Clinical Hypnosis, and the Academy for Guided Imagery. There are state examinations for homeopathy in Arizona, Nevada, and Connecticut. The American Institute of Homeopathy confers a diplomate of homeotherapeutics (DHt) to physicians, and the Council of Homeopathic Certification offers certification in classical homeopathy. Acupuncture licensure standards for physicians exist in many states. We support the continued development of these standards.

Credentialing is an important consideration in a new field. Although PIM resists the concept of a new specialty, hoping to change the practice of medicine more broadly, we recognize the need for standards. As integrative medicine clinics open nationwide with no clear guidelines, the issue becomes critical. One way to address this would be to develop a certificate of added qualification similar to that used in geriatrics—recognized by many boards. The Consortium of Academic Health Centers for Integrative Medicine can make recommendations and influence national policy. It is imperative that it begin to do so.

Integrative medicine education is one piece of the answer to the current health care crisis. PIM has developed its comprehensive curriculum in integrative medicine by synthesizing the work of many fields. We have found that physicians who study and then practice integrative medicine experience rejuvenated relationships with their patients. The call to service that draws most doctors to medicine is restored. Patients experience the humanistic, broad-minded medical care they are seeking. Coupling Osler's call to know the human being with Western technologic mastery, a healing orientation, and prudent use of CAM will create a medicine we can all be proud of.

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Cover Note

HARVARD MEDICAL SCHOOL

On September 19, 1782, the president and fellows of Harvard College adopted a report, presented by President Joseph Willard, embodying plans for a medical school. With a handful of students and a faculty of three, classes at the medical school began in Harvard Hall in the College yard, and later were transferred to Holden Hall, originally the College chapel.

Medical education in that era meant attending formal lectures for a semester or two, and being apprenticed to a practicing physician for several years. No academic preparation was required, no written exams were mandatory. Students did not pay tuition, but bought tickets to admit them to professors' lectures.

The first three professors of the School were John Warren, professor of anatomy and surgery; Benjamin Waterhouse, professor of the theory and practice of physic; and Aaron Dextor, professor of chemistry and materia medica.

Benjamin Waterhouse had been educated at universities and hospitals in Europe. As a result of his contacts in England, he received a publication printed there in 1798 by Edward Jenner, reporting successful vaccination against smallpox. Waterhouse introduced Jenner's ideas to the U.S. medical community and first used the vaccine on members of his own family. As a result of Waterhouse's vigorous support of the smallpox vaccination, it was tested in Boston and gained acceptance in the United States.

John Warren, a very skilled teacher and surgeon, was instrumental in moving the medical school to Boston, where it was more convenient for the faculty to see their private patients as well as those in the dispensaries and military and naval hospitals that were being established in the city. In 1811, Warren's son, John Collins Warren, along with James Jackson, led efforts to start Massachusetts General Hospital.

Besides the original professors, other individuals helped Harvard Medical School over time. Charles Eliot became president of Harvard University in 1869, and in the few years following, he established a novel curriculum at the medical school. Admission standards were raised, written exams requiring passing grades were instituted, new departments of basic and clinical sciences were established, a three-year degree program was introduced, and the apprenticeship system was eliminated.

In 1906, the medical school moved to Longwood Avenue in Boston, and the five marble-faced buildings that comprise the current Quadrangle were dedicated. The Fenway area was open farm and marshland when the medical school moved there, and that combination of new school and empty land stimulated a migration of hospitals to the area. Harvard Medical School has 18 affiliates, where most of the clinical training for interns, residents, and medical students occurs.

Harvard Medical School is a place of "firsts." Since the introduction of smallpox vaccination to America in 1799 by Professor Waterhouse, Harvard Medical School faculty have discovered, innovated, and made giant steps toward improving human health and medical practices. The first introduction of insulin to the U.S. was made by Harvard Medical School researchers. The iron lung was invented for polio patients; then work on poliovirus done at the medical school paved the way for vaccines against polio, and made the iron lung obsolete. Other innovations include mapping the visual system of the brain, development of the external cardiac pacemaker, development of artificial skin, the first successful kidney transplant, initial use of direct electric current to restore the rhythm of the heart, and discovery of the gene that causes Duchenne's muscular dystrophy.

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