SPECIAL THEME ARTICLE

Core Competencies in Integrative Medicine for Medical School Curricula: A Proposal

Benjamin Kligler, MD, MPH, Victoria Maizes, MD, Steven Schachter, MD, Constance M. Park, MD, PhD, Tracy Gaudet, MD, Rita Benn, PhD, Roberta Lee, MD, and Rachel Naomi Remen, MD

ABSTRACT

The authors present a set of curriculum guidelines in integrative medicine for medical schools developed during 2002 and 2003 by the Education Working Group of the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) and endorsed by the CAHCIM Steering Committee in May 2003. CAHCIM is a consortium of 23 academic health centers working together to help transform health care through rigorous scientific studies, new models of clinical care, and innovative educational programs that integrate biomedicine, the complexity of human beings, the intrinsic nature of healing, and the rich diversity of therapeutic systems.

Integrative medicine can be defined as an approach to the practice of medicine that makes use of the best-available evidence taking into account the whole person (body, mind, and spirit), including all aspects of lifestyle. It emphasizes the therapeutic relationship and makes use of both conventional and complementary/alternative approaches.

The competencies described in this article delineate the values, knowledge, attitudes, and skills that CAHCIM believes are fundamental to the field of integrative medicine. Many of these competencies reaffirm humanistic values inherent to the practice of all medical specialties, while others are more specifically relevant to the delivery of the integrative approach to medical care, including the most commonly used complementary/alternative medicine modalities, and the legal, ethical, regulatory, and political influences on the practice of integrative medicine. The authors also discuss the specific challenges likely to face medical educators in implementing and evaluating these competencies, and provide specific examples of implementation and evaluation strategies that have been found to be successful at a variety of CAHCIM schools.

Acad Med. 2004;79:521–531.

The U.S. health care system is in need of fundamental change. . . . Health care today harms too frequently, and fails to deliver its potential benefits routinely. As medical science and technology have advanced at a rapid pace, the health care delivery system has foundered. Between the care we have and the care we could have lies not just a gap, but a wide chasm.

—Institute of Medicine, 2001[1]

The proposed competencies described in this article were developed by the authors and the other members of the Education Working Group of the Consortium of Academic Health Centers for Integrative Medicine and endorsed by that group's steering committee in May 2003. Information about the authors and the other members of the working group is presented in Appendix 2 in this article.

Correspondence and requests for reprints should be addressed to Dr. Kligler, Beth Israel Center for Health and Healing, 245 Fifth Avenue, 2nd floor, New York, NY 10016; telephone: 646-935-2251; fax: 646-935-2273; e-mail: ⟨bkligler@bethisraelny.org⟩.

BACKGROUND AND PURPOSE

Recognition of the need to change the practice of medicine is growing. The 2001 Institute of Medicine (IOM) report from which the quote above was taken, *Crossing the Quality Chasm*, focuses on the current health care system and stresses that medical care will improve by being safe, effective, patient centered, timely, efficient, and equitable. Similarly, the Medical School Objectives Project (MSOP),[2] initiated in 1996, identifies specific attributes of physicians that should be incorporated into the education of medical students: altruism, knowledge, skill, and a sense of duty.

Patients' perceptions about the deficiencies in their medical care are reflected in their increasing expenditures for alternative care,[3] votes in favor of medical freedom acts (Minnesota, North Carolina), and petitions to Congress for

Table 1

Complementary and Alternative Medicine (CAM) Education Project Grants Awarded between 2000 and 2002*

Program	Institution
Educational Initiative in CAM	Georgetown University School of Medicine
Integrative Medicine Curriculum for Health Professionals	University of California, San Francisco, School of Medicine
AMSA CAM Education Initiative	American Medical Student Association
Center for Pediatric Integrative Medical Education	Children's Hospital (Boston)
Integrating CAM into Health-Professions Education	University of North Carolina/Chapel Hill School of Medicine
Curriculum Project	University of Minnesota School of Medicine
Education Program for Nursing	Rush-Presbyterian-St Lukes Medical Center
Evidence-Based Curriculum in Alternative Therapies	University of Texas Medical Branch at Galveston
Integrating CAM into a Family Medicine Residency Program	Maine Medical Center
Interdisciplinary CAM Curriculum Model	University of Kentucky School of Medicine
The Tufts Program in Evidence-Based CAM	Tufts University College of Medicine
Integrative Curriculum for Medicine and Allied Health	University of Michigan School of Medicine
CAM Curriculum at the University of Washington	University of Washington
Oregon CAM Course	Oregon Health and Science University
Integrating CAM: Nursing Emphasis	University of Washington

*These grants were awarded by the National Center for Complementary and Alternative Medicine of the National Institutes of Health.

access to over-the-counter herbs and supplements. The public desire for the integration of "alternative" or "unconventional" treatment approaches into conventional health care settings has been well-documented. Physicians' dissatisfaction with the current system of care is also prevalent, with the limitations imposed by managed care as a major contributing factor.

Integrative medicine offers an approach to the practice of medicine that addresses many of the concerns of the IOM, MSOP, the public, and physicians. Integrative medicine can be defined as an approach to the practice of medicine that makes use of the best-available evidence, taking into account the whole person (body, mind, and spirit), including all aspects of lifestyle. It emphasizes the therapeutic relationship and makes use of the rich diversity of therapeutic systems, incorporating both conventional and complementary/alternative approaches. A detailed discussion of the rationale for this "expanded" approach is beyond the scope of this article but can be found elsewhere in the literature.[4–6]

Over the past ten years, the number of medical schools providing education related to integrative medicine has grown rapidly. As of 1998, 64% of 117 U.S. schools responding to a survey had curriculum offerings in this area.[7] To date, however, many such curricular offerings have been elective and thus not part of the learning experience of most students. When they exist, competencies for complementary/alternative medicine (CAM) have been defined at each local institution, without access to a coherent, generally agreed-upon framework that articulates the core knowledge to be mastered by medical students. The only published set of guidelines for curriculum in CAM for physicians is for family practice residency-level education, endorsed in 2000 by the Society of Teachers in Family Medicine.[8] A similar set of guidelines is under development for residency level education in CAM for pediatrics by the American Academy of Pediatrics.[9] Lacking in-depth background in this area and in the absence of national consensus guidelines for curriculum in integrative medicine, it may be difficult for medical school deans and educators to determine how to prioritize specific areas within integrative medicine into their overall medical school curricula.

Medical schools have used different strategies to teach topics in integrative medicine, such as lecture format, small-group meetings with CAM practitioners, simulated patients, small-group case discussion, and experiential trainings. However, strategies for evaluating curricular interventions have been put into place at only a few of these institutions.[10] Hence, the evaluation of competencies of medical students in integrative medicine is still in its infancy. Between 2000 and 2002, the National Center for Complementary and Alternative Medicine awarded 15 grants to academic institutions to develop curricular initiatives in integrative medicine (see Table 1); evaluation methods are being explored within the initiatives and many of the institutions that received these grants are members of the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM). CAHCIM is a consortium of 23 academic health centers working together to help transform health care through rigorous scientific studies, new models of clinical care, and

innovative educational programs that integrate biomedicine, the complexity of human beings, the intrinsic nature of healing, and the rich diversity of therapeutic systems (for more information about CAHCIM, see Appendix 1).

In this article, we describe a set of curriculum guidelines in integrative medicine for medical schools developed during 2002 and 2003 by the Education Working Group of the Consortium of Academic Health Centers for Integrative Medicine and endorsed by the CAHCIM Steering Committee in May 2003. These competencies delineate the values, knowledge, attitudes, and skills that CAHCIM believes are fundamental to the field of integrative medicine. Many of these competencies reaffirm humanistic values inherent to the practice of all medical specialties, while others are more specifically relevant to the delivery of the integrative approach to medical care. We also address how course directors and deans may incorporate these competencies into medical school curricula.

The competencies described in this article were defined over the course of a two-year-long process among educators from a number of CAHCIM-member institutions (see Appendix 1 for a list of participants). Existing curriculum guidelines from the member institutions were shared and then merged into one document, emphasizing the points held in common by most of the institutions. The ensuing dialogues explored issues including content, process, and scope. The competency document that emerged was then further refined through discussion with curriculum development and evaluation specialists at several member schools.

The following section of this article presents the official CAHCIM statement of proposed core competencies; the remainder of the article discusses teaching and assessment methods, potential barriers to the introduction of the competencies, and thoughts about the future of the competencies.

THE CAHCIM STATEMENT OF PROPOSED COMPETENCIES IN INTEGRATIVE MEDICINE

Introduction

The practice of integrative medicine goes beyond content, tools, and techniques to include an expanded way of viewing the physician, the patient, and their work together. Therefore—in keeping with the recent trend in all of medical education to reaffirm and reemphasize the humanistic values at the core of medicine—training in integrative medicine should incorporate philosophical perspectives in addition to knowledge base and therapeutic skills in order to clearly underscore the relevance of human experience and interactions in health and medicine. In order to explicitly delineate these philosophical perspectives, we (the CAHCIM education working group) have expanded upon the standard "knowledge/attitudes/skills" format for competencies that form the basis of a curriculum, to include a description of values that we believe form the foundation for teaching in this area. These values are a reaffirmation of fundamental core medical values as articulated by Hippocrates. They have also been emphasized—along with many of the competencies that address areas of communication skills and multicultural sensitivity—over the past two decades in medical education in the areas of professionalism, medicine and the humanities, doctor–patient relations, and biopsychosocial training. In addition, many of these values and competencies have long been incorporated into training in other disciplines such as nursing. As these values are particularly germane to the knowledge, skills, and attitudes of integrative medicine theory and practice, they are reiterated here.

We recognize that these values are timeless, whereas the content of courses is almost certain to change as science and research advances. The knowledge, skills, and attitudes sections explore the content, relevant at this point in time, to understanding the foundations of the biomedical paradigm, the most commonly used CAM modalities, and the legal, ethical, regulatory, and political influences on the practice of integrative medicine. The competencies outlined in these sections are not meant to serve as checklists for delineating the exact content of courses in this area—which will need to be defined independently by each school—but rather as general guidelines describing areas of content that must be addressed to describe this area accurately to our students.

The goal in elaborating values as well as knowledge, attitude, and skills is to make explicit not only specific behaviors, but also a way of living and being for physicians. Some would argue that the majority of these values are actually attitudes, and would raise the question of whether values can be taught or rather need to be selected for. We acknowledge the challenge of assessing "a way of being." Perhaps its measurement may be learned from other traditions such as theological training or through qualitative inquiry and study of exemplary integrative practitioners. Finally, we acknowledge that these competencies may be adapted and/or modified in a variety of ways to fit the particular needs and culture of individual schools.

Values

A graduating physician shall demonstrate an understanding of the following:

1. A physician is defined by a philosophy and perspective on health and illness as well as by a set of skills and techniques. This broad perspective will improve out-

comes for patients, deepen fulfillment in collegial relationships, and enable the physician to find continuing meaning in his or her work.
2. A physician has a broad definition of professionalism, which allows the health care team to become a healing community that supports and develops wholeness in all relationships, those between colleagues as well as those between physician and patient.
3. A physician recognizes the relevance of feelings, beliefs, life experiences, meaning, and faith to his/her professional behavior. This broadens the nature of physician–patient interaction and shifts the conventional boundaries of physician–patient relationship.
4. A physician is able to recognize the value of his or her own full human experience and to focus and dedicate it to the benefit of patients. Who the physician is as a person is transmitted through his or her work and "presence" and has a substantive impact on the outcome of the doctor–patient relationship.
5. A physician believes that an ongoing commitment to personal growth is fundamental to the practice of medicine.
6. A physician is able to create a relationship of harmlessness, safety, nonjudgment, and acceptance that enables patients to access their own strengths and direct their own lives.
7. A physician recognizes the pursuit of meaning as fundamental to the process of healing and has the capacity to find meaning in daily work and daily relationships. This capacity allows him/her to accompany patients as they seek and find meaning in the events of their lives.
8. A physician recognizes the multivariate and sometimes unknown factors that influence health and healing.
9. A physician views health and illness as a part of human development that can evoke the potential for personal and social wholeness through the experience of illness and suffering.

Knowledge

A graduating physician shall be able to:

1. Discuss how personal, cultural, ethnic, and spiritual beliefs shape an individual's interpretation and experience of his or her disease and its treatment.
2. Identify the major strengths and limitations of biomedical knowledge as applied to health care delivery.
3. Give examples of the different ways of knowing about illness and healing.
4. Discuss the distinction between the terms "healing" and "curing."
5. Describe the distinction between integrative medicine (IM) and CAM.
6. Describe the evidence for mind–body–spirit relationships in illness and health.
7. Describe the prevalence and patterns of CAM use in the patient's community.
8. Describe the basic concepts of the most commonly used CAM modalities such as chiropractic, herbal and nutritional medicine, and mind–body therapies, and of one or more of the widely used traditional systems of medicine such as Chinese medicine and Ayurvedic medicine, including:
   a. Basic definitions/theory/philosophy/history
   b. Common clinical applications
   c. Potential for adverse effects
   d. Current research evidence for efficacy
   e. Reputable resources for in-depth information
   f. Training/credentialing standards for practitioners
9. Identify potential legal and ethical implications related to the inclusion or the exclusion of CAM modalities in a patient's treatment plan.
10. Identify reputable information resources for CAM and IM in order to support life-long learning.
11. Explain the current status of government regulation of herbal medicines and dietary supplements.

Attitudes

A graduating physician shall be able to demonstrate:

1. A respect for the influence of the patient's personal, cultural, ethnic, and spiritual beliefs on their experience of health and illness and on the patient's clinical decision-making process
2. An awareness of how the physician's own personal, cultural, ethnic, and spiritual beliefs may affect their choice of recommendations regarding patients' treatment decisions.
3. A respect for the strengths and limitations of applying evidence-based medicine principles to the circumstances of an individual patient.
4. A respect for the potential of a variety of healing approaches to be effective for the treatment of certain conditions.
5. An awareness of the importance of self-care both for physician well-being and as a model to promote self-care in patients.

Skills

A graduating physician shall be able to:

1. Demonstrate an ability to assist patients in developing their own self-care program as part of encouraging active patient involvement in health promotion and clinical decision making.
2. Demonstrate skills to communicate effectively with patients about all aspects of their health and illness including biological, psychological, social, and spiritual as part of comprehensive history taking.
3. Demonstrate skills to communicate effectively:
   a. with patients about their use of CAM in a respectful and culturally appropriate manner; and
   b. with patients and all members of the interdisciplinary health care team in a collaborative manner to facilitate quality patient care. (The team may include nurses, chaplains, nutritionists, social workers, practitioners of healing systems other than allopathic medicine such as Chinese medicine or chiropractic, etc.)
4. Design a personal self-care program that includes:
   a. Learning to assess one's level of stress
   b. Implementing a self-care strategy (may include nutrition awareness, self-regulatory techniques, exercise, journaling, creative arts, spirituality, mind–body skills, etc.)
5. Demonstrate an ability to utilize the principles of evidence-based medicine in analyzing integrative medicine approaches, including:
   a. developing focused question regarding the application of IM principles or practices for an individual patient;
   b. utilizing databases, peer-reviewed publications, authoritative textbooks, Web-based resources, experiential knowledge of CAM practitioners, and participatory observation to gather relevant information;
   c. evaluating the information for scientific quality and clinical relevance;
   d. formulating a plan to implement findings in care of an individual patient; and
   e. evaluating the outcome of applying IM principles or practices in patient care.

TEACHING AND ASSESSMENT METHODS

Given the divergent nature of CAM therapies and the varying levels of evidence that support their use, the integration of these topics into conventional medical education poses a unique challenge.[11] Innovative educational approaches are required to achieve an effective understanding of the principles and practice of integrative medicine. These approaches demand that educators in this area of medicine develop methods beyond those needed to teach new scientific facts. Three key components for effective implementation of teaching in integrative medicine that are not typically part of medical school curricula at medical schools are

- experiential approaches to facilitate an understanding of complementary and alternative therapies;
- education of medical students in self care and reflection; and
- faculty development programs to produce educators who have both knowledge and skills in integrative medicine and recognize the importance of self-care and reflection in medical education and practice.

Experiential Learning

A reasonable first level of implementation is an introduction to many alternative medical practices and systems, which may include acupuncture, homeopathy, chiropractic, naturopathy, Ayurveda (and other traditional healing practices), mind–body interventions (meditation, hypnosis, etc.), biologic-based therapies (herbal medicine, dietary supplements, orthomolecular medicine), and manipulative and body-based medicine and energy modalities.[12]

Teaching these subjects would be straightforward if introducing these therapies required only the presentation of new facts. However, systems such as Chinese medicine are complex and are founded on paradigms that differ significantly from the allopathic medical model. Teaching these topics solely through a lecture format, although necessary as a start, may not be sufficient to develop a real understanding. A lecture on acupuncture is unlikely to capture the sensate experience of having an acupuncture needle placed or the deep relaxation that may be experienced through a practice such as tai chi. Similarly, describing the physiology of the relaxation response may be less effective than having students experience it directly through a meditation exercise.

Inclusion of traditional systems of medicine and other complementary approaches requires both a synthesis of additional facts and a need for experience-based understanding to facilitate real clinical awareness. As with other aspects of a "multicultural approach" to medical education, immersion and other experience-based teaching methods can be invaluable to facilitate an understanding of the differences between "conventional" and "unconventional" views of health and illness and how they can be reconciled. The experiential component adds a rich contextual learning base that augments the acquisition of facts related to these unfamiliar therapies. Furthermore, immersion adds empathetic awareness in students that they will use in the future when they are making recommendations to their patients about their care.

Recognizing this need, many institutions have incorporated experiential components into their undergraduate integrative medicine curricula.[13] Many schools that offer fourth-year clinical electives in alternative therapies provide students with multiple opportunities to experience CAM modalities either directly on themselves or by direct observation of their use with patients. Unfortunately, to date much of this experiential learning is available only in elective courses and thus does not reach a large proportion of the students.

Self-Care and Self-Reflection in Medical Education

A central tenet of integrative medicine is the notion that self-care for the physician, and the cultivation of a practice of reflection, are critical to the effective practice of medicine. The 1998 MSOP learning objectives suggest that "physicians must be compassionate and empathetic in caring for their patients . . . [and] have honesty and integrity in all interactions with patients' families, colleagues and with others whom they must interact in their personal lives."[2] Implicit in this objective, it would seem, is that physicians should value and cultivate these attributes in themselves and engage in life-supporting activities that will foster their own health so as to serve as effective role models for their patients. But the nature of conventional medical training and professional life often do not support this practice. Therefore, many medical schools have already recognized the need to add formal education in self-care and reflection to their curriculum.

One of the best examples is a course entitled The Healer's Art: Awakening the Heart of Medicine, developed at the University of California, San Francisco, School of Medicine ten years ago, which has now been replicated in over 20 other schools around the country. The purpose of this elective is to provide support for first- and second-year medical students in valuing and recognizing the human dimension of health care, and in maintaining a focus on the meaning of their work in medicine. This focus is expressed in the following statement:

> Meaning is the antecedent of commitment, and the original meaning of our work is service. Service is not a relationship between an expert and a problem; it is a human relationship, a work of the heart and the soul. Learning to serve requires education not training. The root word of education, *educari*, means to lead forth the innate wholeness of each student.[14]

The self-reflection modules in The Healer's Art are facilitated by medical and behavioral science faculty who commonly are preceptors in other conventional clinical modules. The dialogue provided by this mixture of teachers enables students to experience a collegial relationship that is supportive without judgment and that fosters mutual respect.

Faculty Development

The qualifications that faculty need to present topics in integrative medicine will essentially be those that have always been valued in teachers: competence in their area of expertise, effective communication skills, and an ability to challenge students to learn how to think for themselves. However, because integrative medicine is a relatively young field, few established medical educators are currently trained in the principles and practice of this emerging approach. Consequently, both experiential- and lecture-based faculty-development programs will be critical in helping educators familiarize themselves with this field. Some authors have suggested that exchange rotations and externships may be an effective way to facilitate a better understanding of this area for medical students—perhaps this strategy may be necessary for medical educators as well.

A few models of intensive faculty development are underway that diverge from the typical continuing medical education format. The University of Arizona College of Medicine has a two-year distance-learning fellowship program that trains clinicians already established in their fields to become integrative clinicians, irrespective of their specialty. Several medical schools have already utilized this Internet-based fellowship as part of an effort to educate their faculty in integrative medicine with the intention of bringing this perspective back to their home professional environments after training is completed. Interdisciplinary faculty development programs in integrative health care—which typically offer a series of day-long sessions or two- to four-day intensive workshops focusing on theoretical principles, clinical practices, and evidence related to integrative medicine, as well as on personal experience, self-care and reflection—have also been successfully implemented at a number of schools. The University of Michigan Medical School, for example, has created a yearlong program in which a group of academic "faculty scholars" from divergent disciplines and fields of health care participate one day a month to learn about integrative approaches to healing.

Assessment and Evaluation

There are a number of educational assessment tools to measure competencies in integrative medicine. One is a questionnaire developed by Schneider et al.[15] entitled the Integrative Medicine Attitudes Questionnaire. Its initial purpose was to determine whether the attitudes about complementary and alternative therapies of practitioners familiar

with integrative medicine differ demonstrably from the attitudes of conventionally trained physicians unfamiliar with these practices. Studies utilizing the questionnaire demonstrated statistically significant attitude differences between the two populations of clinicians. Currently, this questionnaire is being piloted as an evaluative tool at several schools including Duke University School of Medicine and the University of North Carolina at Chapel Hill School of Medicine. Surveys that evaluate students' knowledge bases and attitudes toward integrative medicine pre and post curriculum implementation may prove useful for assessing student competency and tracking student learning, especially if administered repeatedly over the course of a student's training. The survey tool developed by Benn and her colleagues[10] at the University of Michigan Medical School has been specifically designed to measure medical students practice attitudes towards incorporation of complementary, alternative, and allopathic medicine. The factor structure underlying this questionnaire explicitly addresses integrative, conventional, and relationship-focused dimensions, and can be used to track both individual changes in a student's attitudes over time, as well as programmatic changes resulting from more comprehensive inclusion of curriculum material related to integrative medicine. This longitudinal approach can constitute a foundation for continued focused assessments and refinements of a more comprehensive educational program in integrative medicine.

Specific integrative medicine assessment instruments (attitudinal or knowledge based) are useful for measuring learner outcomes. Assessment of specific courses or components in the curriculum and associated learner outcomes for medical education in integrative medicine should, however, include a variety of evaluation tools and approaches. The instruments used ought to have rigorous, established criteria, such as appropriate design (e.g., time, length, unambiguous questions, matching scales), and good psychometric properties (i.e., an assessment of the validity and reliability of scores from the instruments). In addition, they must be responsive to the specific questions that need to be answered within a program or institutional context. Creswell[10] suggests that the curriculum evaluation plans reflect not only traditional course measures (e.g., pre- and posttest multiple-choice examinations, objective performance-based assessments, graduation surveys), but also emerging means of learning in these educational settings. These methods might include, at different points in the curriculum, the use of qualitative data collection consisting of personal narratives from participants (e.g., student, faculty, practitioners), one-on-one interviews or focus groups (e.g., about beliefs with students, faculty), multiple observations of student behaviors (e.g., with simulated patients or reactions to a standardized patients), and student journal reflections (e.g., in regard to patient encounters, problem-based learning scenarios, CAM providers, self-care practices). A manual entitled "Curriculum in Integrative Medicine: A Guide for Medical Educators," which provides a model set of curriculum modules with accompanying assessment strategies, is available from CAHCIM.

POTENTIAL BARRIERS

Perhaps the most significant challenge posed by the introduction of integrative medicine competencies into the conventional medical school curriculum is that alternative health care systems often challenge the paradigm of understanding human health and illness that underlies modern biomedicine. This can be difficult for those whose backgrounds are in established systems of medical education, but it offers an opportunity for everyone involved to critically reevaluate the current biomedical paradigm. The integration of discussion of these "alternative" ways of understanding health and illness needs to be done with respect and sensitivity for the value and power of the current paradigm.

The concept of synergy, important in integrative medicine, is an example of this challenge. This concept—that any given therapy or healing approach cannot necessarily be completely understood by a process of analyzing its component parts—is intrinsic to the integrative medicine approach, and is in direct opposition to the reductionist approach of conventional science, which holds that a whole can always be understood by reducing it to its individual parts. For example, the benefits of a certain herbal medicine, which stem from the combination of and interaction between its many active constituents, may in fact be greater than, or different from, the sum total of the benefits of each constituent when studied individually.

A second, and equally challenging, obstacle to the integration of this material at many schools is finding time for it.[16] Educators at a number of schools have addressed this problem by working to incorporate teaching on integrative medicine into existing courses rather than looking to establish new courses. For example, introducing teaching on how to take an effective history of a patient's use of CAM modalities into the interviewing course has been an effective strategy; another example would be integrating a patient's use of CAM modalities into an existing standardized patient encounter or problem-based learning case rather than trying to find room for an entirely new session covering only an integrative medicine topic. This "integrative" approach to the time challenge avoids many of the power and political struggles that typically govern allocation of time in the preclinical curriculum. It is also more in keeping with the ultimate goal of having this material thoroughly integrated

into the entire medical school curriculum rather than standing alone in either a required or an elective course.

The political climate for the discussion of CAM and integrative medicine will vary widely from one school to another. The competencies presented here can be adapted or customized to meet the needs of educators and students at a given school. Some institutions have already begun a process of integrating teaching on this area into all aspects of their curriculum; others are still engaged in debating whether teaching in this area is appropriate at all.

FUTURE DIRECTIONS

We believe that the integrative medicine curriculum will ultimately be seamlessly incorporated into medical education. The fact that many of the core principles of integrative medicine are really a reaffirmation of fundamental principles that already have widespread support in many constituencies within medical education will facilitate this change.

The path to integration will not be through the often-cited unrealistic prediction that research will at some point have definitively proved what is "good medicine" and what is not "good medicine."[17] The definition of good medicine (best practices) will be forever changing as new discoveries are made and society considers the ethical and social implications of various treatment modalities. In addition, there will always be complex, potentially therapeutic regimens that cannot be adequately tested for financial, ethical, or technical reasons. Furthermore, even after adequate study of a given regimen, fundamental uncertainty of medical practice will remain; i.e., the fact that epidemiologic research produces probabilistic results that cannot predict with certainty the best treatment for any single unique patient.[18]

We believe that growing recognition of the complexities inherent in the practice of medicine will continue to drive medical education initiatives in the directions we have outlined. Considerable movement is already evident in at least the following four areas.

Values

Underlying all medical education is a de facto set of goals, based on values that direct decisions about what to teach. The goals themselves and the philosophical orientations they are built on change primarily through societal trends, not through scientific inquiry, though the latter can enlighten the discourse. It is through sociopolitical processes that the values for education in integrative medicine will be considered and, we believe, ultimately mainstreamed. The goal of medical practice as currently reaffirmed is to maintain and improve the health of individual people and of populations.

The goal of medical education is primarily to train practitioners for the benefit of patients. To better meet the needs and expectations of patients, the concept of health has evolved in recent years to include the interrelated concepts of physical, emotional, and spiritual health. Thus many mainstream medical school curricula now present the practice of medicine as a complex activity drawing on emotional and interpersonal processes as well as cognitive processes that require a broad range of knowledge bases, including biomedical, epidemiologic, psychosocial, cultural, economic, and ethical. Recent trends in educational efforts such as meetings of the Association of American Medical Colleges as well as current requirements of the Liaison Committee on Medical Education in multicultural competency and professionalism affirm that an explicit discussion of these values is an important dimension of undergraduate medical education. In the future, integrative medicine can help strengthen this aspect of training and the values statement can serve as a guidepost.

Advances in Biomedicine

With advances in biomedicine, new macromolecules and pathways are discovered and the complexity of the human organism becomes ever more apparent. This leads to a multifactorial view of health and disease processes and concepts of homeostasis, balance, and interconnectedness are increasingly invoked. For example, as the mind–body duality loses its influence on Western medicine concepts, there are more investigations of how the mind can affect the body and vice versa. Mechanisms responsible for the placebo effect and for the detrimental effects of stress are actively being sought. Research in neuroendocrinology, neuroimmunology, and the autonomic nervous system has identified many humoral and neurological systems that could mediate mind–brain–body connections. There even arise speculations that complex biological activities like brain function produce "emergent processes" that arise from the functioning of the system as a whole and cannot be easily dissected into component parts. All these developments are consistent with the orientation of integrative medicine, which implicitly respects the subtle interconnections between systems (including mind–body interactions) as well as concepts of balance and of the whole being more than the sum of the parts.[19]

Medical Uncertainty and Clinical Decision Making

It is increasingly clear to the public and professionals that there will always be available therapies that are not adequately tested. At the same time there is a growing trend for patients to want an active role in decision making and for clinicians to recognize the uncertainty involved in making

clinical decisions. Furthermore, it is now widely understood that epidemiologic studies can be flawed, and while well-done studies are of fundamental importance for guiding decisions, they are not able to predict with certainty the actual response that an individual patient will have. Since integrative medicine practitioners are often involved in exploring with patients choices among a variety of options that are not well studied, it is incumbent on these clinicians to be well versed in the critical thinking skills required to make decisions with an incomplete database. Academic integrative medicine physicians are needed to help teach the critical thinking and communication skills needed to undertake joint doctor–patient clinical decision making under conditions of uncertainty. As the importance of this aspect of medical education becomes increasingly clear, this aspect of the integrative medicine curriculum will likely be mainstreamed.

Beyond Individuals to Families, Communities, Cultures, and a World View

Good medical practice requires seeing each patient as a unique individual and avoiding stereotyping, while acknowledging and respecting the sociocultural identities that help structure and give meaning to a patient's life. A number of organizations already recommend or mandate the teaching of cultural competence in medical school. There is a natural role for teaching in this endeavor in the context of the integrative medicine curriculum, since the practice of culturally sensitive health care clearly requires an awareness of and respect for cultural traditions and practices, especially those related to health and healing.

Integrative medicine is as important as medical anthropology and medical ethics in providing conceptual frameworks for a cultural competence curriculum that promotes cultural tolerance, respect, and humility. Integrative medicine curricular materials are already in demand as sources of information on traditional and folk health care systems that foster respect for the rich diversity of healing traditions and build student interest in global health. Our hope is that the competencies presented in this article offer a useful tool for educators as we move forward with this exciting new area of medical education.

The Consortium of Academic Health Centers for Integrative Medicine is supported by grant funding from the Philanthropic Collaborative for Integrative Medicine.

REFERENCES

1. Institute of Medicine. Crossing the Quality Chasm: A New Health System for the 21st Century. Washington DC: National Academy of Sciences Press, 2001.
2. The Medical School Writing Group. Learning objectives for medical student education—guidelines for medical schools: Report I of the Medical School Objective Project. Acad Med. 1999;74:13–8.
3. Eisenberg DM, Davis R, Ettner S, et al. Trends in alternative medicine use in the United States, 1990–1997. JAMA. 1998;280:1569–75.
4. Snyderman R, Weil A. Integrative medicine: bringing medicine back to its roots. Arch Intern Med. 2002;162:395–7.
5. Tonelli MR. The Philosophical Limits of Evidence-based Medicine. Acad Med 1998;73:1234–40.
6. Astin J. Complementary and alternative medicine and the need for evidence-based criticism. Acad Med 2002;77:864–8.
7. Wetzel MS, Eisenberg DM, Kaptchuk TJ. Courses involving complementary and alternative medicine at US medical schools JAMA. 1998; 280:784–7.
8. Kligler B, Gordon A, Stuart M, Sierpina V. Suggested curriculum guidelines on complementary and alternative medicine: recommendations of the Society of Teachers of Family Medicine Group on Alternative Medicine. Fam Med. 1999;31(10):30–3.
9. Kathi Kemper, MD. Professor of Pediatrics, Wake Forest University School of Medicine, Winston-Salem, North Carolina. Personal communication, January 2003.
10. Proceedings of a Working Group on Evaluation of CAM Curricula. Ann Arbor, MI: University of Michigan Complementary and Alternative Medicine Research Center, 2003 [unpublished].
11. Gaudet TW. Integrative medicine: the evolution of a new approach to medicine and to medical education. Integ Med. 1998;1:67–73.
12. Maizes V, Schneider C, Bell I, Weil AT. Integrative medical education: development and implementation of a comprehensive curriculum at the University of Arizona. Acad Med. 2002;77:851–60.
13. Wetzel M, Kaptchuck T, Haramati A, et al. complementary and alternative medical therapies: implications for medical education. Ann Intern Med. 2003;138:191–6.
14. Remen R. Recapturing the soul of medicine. West J Med. 2001;174–5.
15. Schneider C, Meek P, Bell I. Development an validation of the integrative medicine attitude questionnaire (IMAQ). Altern Ther Health Med. 2001;7:3[abstract].
16. Waldstein SR, Neumann SA, Drossman DA, Novack DH. Teaching psychosomatic (biopsychosocial) medicine in United States medical schools: survey findings. Psychosom Med 2001;63:335–43.
17. Angell M, Kassirer JP. Alternative medicine—the risks of untested and unregulated remedies. N Engl J Med. 1998;339:839–41.
18. Park CM. Diversity, the individual, and proof of efficacy: complementary and alternative medicine in medical education. Am J Public Health. 2002;92:1568–72.
19. Bell I, Caspi O, Schwartz GER, et al. Integrative medicine and systematic outcomes research: issues in the emergence of a new model for primary health care. Arch Int Med. 2002;162:133–40.

APPENDIX 1

The Consortium of Academic Health Centers for Integrative Medicine (CAHCIM)

DESCRIPTION

The Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) was formed in 1999 with eight institutions known for their accomplishments in the clinical, educational, and research aspects of integrative medicine.* The group met in a retreat setting using a dialogue format to inform one another and develop an influential working community grounded in mindfulness. Deans and chancellors attended and participated fully in the collective inquiry. In so doing, a foundation was created for moving the vision of integrative medicine forward in the actions and experiences of its founders as well as in its articulated goals. The Consortium has met twice since this initial meeting and now comprises 23 member schools (listed below).

The mission of CAHCIM is “to help transform healthcare through rigorous scientific studies, new models of clinical care, and innovative educational programs that integrate biomedicine, the complexity of human beings, the intrinsic nature of healing and the rich diversity of therapeutic systems.” Criteria for admission to CAHCIM include:

- Meeting the criteria of the Association of Academic Health Centers (AAHC) defining an academic health center†
- Having an established program in integrative medicine that includes ongoing work in more than one of three areas: research, education, and clinical activity
- Having the institutional commitment of the health center in institutional movement in the field of integrative medicine, as evidenced by expressed support from senior leadership (chancellor or dean) of the health center

CAHCIM members are committed to sharing information and ideas, meeting challenges together in a process grounded in the values of integrative medicine, supporting member institutions, and providing a national voice for integrative medicine. The education subcommittee’s goals are to inform and help shape medical education policy. Specific objectives of interest are the incorporation of integrative medical education into medical school and residency curricula and the inclusion of questions on integrative medicine in the National Board of Medical Examiners examinations.

CAHCIM MEDICAL SCHOOL MEMBERS

Albert Einstein College of Medicine of Yeshiva University
Columbia University College of Physicians and Surgeons
Duke University School of Medicine
George Washington University School of Medicine and Health Sciences
Georgetown University School of Medicine
Harvard Medical School
Jefferson Medical College of Thomas Jefferson University
Oregon Health & Science University School of Medicine
Stanford University School of Medicine
University of Arizona College of Medicine
University of Calgary Faculty of Medicine
David Geffen School of Medicine, UCLA
University of California, San Francisco, School of Medicine
University of Hawaii John A. Burns School of Medicine
University of Massachusetts Medical School
University of Maryland School of Medicine
UMDNJ–New Jersey Medical School
University of Michigan Medical School
University of Minnesota Medical School
University of Pennsylvania Health System
University of Pittsburgh School of Medicine
University of Texas Medical Branch at Galveston
University of Washington School of Medicine

*Duke, Harvard, Stanford, University of Arizona, University of California (San Francisco), University of Massachusetts, University of Maryland, University of Minnesota.

†According to the AAHC, an academic health center consists of an allopathic or osteopathic medical school and at least one other health profession school or program and at least one affiliated or owned teaching hospital.

APPENDIX 2

The Members of the Education Working Group of the Consortium of Academic Health Centers for Integrative Medicine*

Rita Benn, PhD
Director of education, Integrative Medicine Program
University of Michigan School of Medicine

Brian Berman, MD
Professor of family medicine
University of Maryland School of Medicine

Maggie Covington, MD
Director of education, The Center for Integrative Medicine
University of Maryland School of Medicine

David Eisenberg MD
Bernard Osher Associate Professor of Medicine
Harvard Medical School

Dr. Alfred Fishman
Professor of Medicine
University of Pennsylvania School of Medicine

Tracy Gaudet, MD
Assistant clinical professor of obstetrics and gynecology
Duke University School of Medicine

Aviad Haramati, PhD
Professor of physiology and biophysics and medicine
Georgetown University School of Medicine

Ellen Hughes, MD
Clinical professor of medicine
University of California, San Francisco, School of Medicine

Darlene Kerr
Administrative assistant, Program in Integrative Medicine
University of Arizona College of Medicine

Benjamin Kligler, MD, MPH
Assistant professor of family medicine
Albert Einstein College of Medicine

MaryJo Kreitzer, PhD
Associate professor of nursing
University of Minnesota School of Nursing

Karen Lawson, MD
Director of integrative clinical services, Center for Spirituality and Healing
University of Minnesota School of Medicine

Roberta Lee, MD
Medical director and co-director, Fellowship in Integrative Medicine
Beth Israel Center for Health and Healing

Victoria Maizes, MD
Assistant professor of family and community medicine
University of Arizona College of Medicine

Constance M. Park, MD, PhD
Clinical associate professor of medicine
Columbia University College of Physicians and Surgeons

Adam Perlman, MD
Assistant professor of medicine
UMDNJ–New Jersey Medical School

Rachel Naomi Remen, MD
Clinical professor of family and community medicine
University of California, San Francisco, School of Medicine

Steven Rosenzweig, MD
Associate clinical professor of emergency medicine
Jefferson Medical College of the Thomas Jefferson University

Steven Schachter, MD
Professor of neurology
Harvard Medical School

Victor Sierpina, MD
Associate professor of family medicine
University of Texas Medical Branch at Galveston

*This working group developed the proposed competencies in integrative medicine reported in this article. The Consortium of Academic Health Centers for Integrative Medicine is supported by grant funding from the Philanthropic Collaborative for Integrative Medicine.