

Courses Involving Complementary and Alternative Medicine at US Medical Schools

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Context.—With the public's increasing use of complementary and alternative medicine, medical schools must consider the challenge of educating physicians about these therapies.

Objectives.—To document the prevalence, scope, and diversity of medical school education in complementary and alternative therapy topics and to obtain information about the organizational and academic features of these courses.

Design.—Mail survey and follow-up letter and telephone survey conducted in 1997-1998.

Participants.—Academic or curriculum deans and faculty at each of the 125 US medical schools.

Main Outcome Measures.—Courses taught at US medical schools and administrative and educational characteristics of these courses.

Results.—Replies were received from 117 (94%) of the 125 US medical schools. Of schools that replied, 75 (64%) reported offering elective courses in complementary or alternative medicine or including these topics in required courses. Of the 123 courses reported, 84 (68%) were stand-alone electives, 38 (31%) were part of required courses, and one (1%) was part of an elective. Thirty-eight courses (31%) were offered by departments of family practice and 14 (11%) by departments of medicine or internal medicine. Educational formats included lectures, practitioner lecture and/or demonstration, and patient presentations. Common topics included chiropractic, acupuncture, homeopathy, herbal therapies, and mind-body techniques.

Conclusions.—There is tremendous heterogeneity and diversity in content, format, and requirements among courses in complementary and alternative medicine at US medical schools.

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AMONG THE MANY forces influencing the present health care environment is the rapid increase in the use of complementary and alternative medical therapies. We have known for several years that approximately 1 in 3 adults in the United States uses chiropractic, acupuncture, homeopathy, or one of many other treatment modalities.¹ Reasons cited for the trend toward the use of alternative therapies include dissatisfaction with conventional health care that is perceived as ineffectual, too expensive, or too focused on curing disease rather than maintaining

good health.² Alternative therapies are often seen as less authoritarian and more congruent with patients' values and beliefs about the meaning of health and illness.³ Medical educators increasingly realize that it is not a question of whether to address these issues in the education of future physicians but rather how to respond to this relentless challenge to evolve.⁴

In 1997, the Group on Educational Affairs of the Association of American Medical Colleges (AAMC) announced the formation of the Special Interest Group in Alternative and Complementary Medicine.⁵ The Society of Teachers of Family Medicine⁶ and the American Public Health Association⁷ have also recently formed special interest groups around complementary and alternative therapies,⁷ and the Federation of State Medical Boards has urged the development of educational opportunities for licensees, consumers, and legislators in this area.⁸

The American Medical Association (AMA) has recognized the need for medical schools to respond to the growing interest in alternative health care practices. A 1997 report on "Encouraging Medical Student Education in Complementary Health Care Practices" responded to a request for the AMA to "study the development of a model elective curriculum for increasing awareness of the prevalence and potential impact of various complementary/alternative health care practices on patients' health" by concluding that "medical schools should be free to design their own required or elective experience related to alternative/complementary health care practices."⁷

Results of the 1996-1997 and 1997-1998 Annual Medical School Questionnaire Part II distributed by the Liaison Committee on Medical Education indicate a notable increase in instruction in "alternative medicine." Although no medical school reported offering a separate required course in complementary health care practices, medical schools covering these areas as part of a required course increased to 63 (from 46 in 1996-1997) and medical schools offering a separate elective course increased to 54 (from 47 in 1996-1997). In the 1996-1997 academic year, 34 medical schools offered instruction as part of an elective course, and 28 offered other educational experiences.

The purposes of our study were to document the prevalence, scope, and diversity of medical school education in complementary and alternative medicine topics and to compile information about the organizational and academic features of these courses.

METHODS

In January 1997, we sent a mail survey to all 125 US medical schools listed in the *Directory of American Medical Education*.⁹ A 1-page letter stated that the survey intended to document the scope and diversity of medical school education in complementary and alternative medicine, defined as treatment modalities not traditionally taught in Western medical

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Table 1.—Prevalence and Administrative Characteristics of US Medical School Courses Devoted to Complementary and Alternative Medicine, 1997-1998 Survey

School and Course Characteristics	No. (%)
Total number of US medical schools	125 (100)
Schools responding to education survey	117 (94)
Schools with ≥ 1 course or complementary and alternative medicine topics as part of a required course	75 (64)
Schools with stand-alone courses	61 (81)
Schools with complementary and alternative medicine topics in required courses	31 (41)
Schools with both stand-alone courses and topics as part of a required course	17 (23)
Schools reporting 1 course	47 (63)
Schools reporting ≥ 2 courses	28 (37)
Total number of courses reported	123 (100)
Complementary and alternative medicine topics as stand-alone courses	84 (68)
Complementary and alternative medicine topics as part of required courses	38 (31)
Complementary and alternative medicine topics as part of elective courses	1 (<1)
Predominant departmental affiliations	123 (100)
Family practice/community medicine	38 (31)
Medicine/internal medicine	14 (11)
Psychiatry	4 (3)
Office of medical education/dean's office	11 (9)
Affiliated institutes or centers	9 (7)
Humanities/medical humanities	5 (4)
Interdepartmental/integrated	5 (4)
Other	21 (17)
No departmental affiliation	16 (13)
Academic credit provided	123 (100)
Yes	97 (79)
No	8 (7)
Not reported	18 (15)

schools, such as chiropractic, acupuncture, massage, and homeopathy,¹ although we are aware that other terms such as *integrative medicine* and *unorthodox medicine* are frequently used and often preferred. The questionnaire was sent on a standard-sized postal card along with a letter. The survey was addressed to the highest-ranking individual listed at each medical school who appeared to have curriculum responsibilities, typically with the title of associate dean for academic affairs, associate dean for medical education, or assistant dean for curriculum.

We sent a follow-up letter in September 1997 to schools that did not respond to the postal card survey and to those that reported no courses in complementary and alternative medicine, and we inquired whether plans had changed for the coming academic year. Schools included on previously published lists as having complementary and alternative therapy courses were contacted by telephone, and schools reporting affirmatively were asked for additional information about their courses. We systematically recorded data in the following 10 categories: name of course(s); sponsoring department(s); type of course (required, elective, part of a required course, part of an elective course); academic credit (yes or no); number of students enrolled per year in each course; type of students (medical, nursing, or other); format of

course (seminar, faculty lecture, practitioner lecture or demonstration, patient presentation, or other); teaching methods (lecture, case study, demonstration, observation, or other); amount of scheduled time; and academic requirements (readings, examination, paper, or project). We also invited schools to send course descriptions or syllabi. We completed follow up with the schools in April of 1998.

RESULTS

We received replies from 117 (94%) of the 125 US medical schools contacted. Of the 117 schools responding, 75 (64%) reported offering 1 or more courses in complementary and alternative medicine or including these topics in required courses (Table 1). The majority, 47 (63%) of 75 schools, offered a single course and 28 (37%) offered 2 or more courses. A total of 123 courses was reported. Twenty-nine schools provided additional details or sent syllabi, course descriptions, course objectives, or other information. The data were organized into 2 categories. The descriptions of organizational aspects of the courses are shown in Table 1 and the educational features are shown in Table 2.

All of the free-standing complementary and alternative medicine courses for medical students are currently offered as electives. Thirty-one schools (41% of those reporting courses) re-

Table 2.—Educational Format and Teaching Methods of US Medical School Courses Devoted to Complementary and Alternative Medicine, 1997-1998 Survey

Course Characteristics	No. (%)
Predominant course format	65 (100)
Faculty lecture	41 (63)
Seminar	40 (62)
Practitioner lecture/demonstration	50 (77)
Patient presentation	17 (26)
Other	26 (40)
Predominant teaching methods	65 (100)
Lecture	46 (71)
Discussion	57 (88)
Case studies	28 (43)
Other	26 (40)
Academic requirements	61 (100)
Required readings	45 (74)
Paper or project	34 (56)
Examination*	10 (19)

*Total number of schools reporting equals 56.

ported 38 courses that include complementary and alternative medicine topics (eg, prevalence, relevance for interviewing skills) as a component of a required course. These topics are frequently found in introduction to clinical medicine or patient-physician communication courses in the first or second year, with electives typically offered in the third and fourth years. Seventeen schools reported both 1 or more elective courses and complementary and alternative medicine topics as part of a required course.

The amount of time scheduled for elective courses ranged from 6 to 160 contact hours, with only 9 schools reporting courses of more than 100 hours. Of these, 5 schools were characterized as having clerkships or rotations: University of Florida College of Medicine, Gainesville; Georgetown University School of Medicine, Washington, DC; Jefferson Medical College of Thomas Jefferson University, Philadelphia, Pa; Marshall University School of Medicine, Huntington, WV; and the University of New Mexico School of Medicine, Albuquerque. The remaining 4 with longer courses—the University of Cincinnati College of Medicine, Cincinnati, Ohio; Cornell University Medical College, New York, NY; Johns Hopkins University School of Medicine, Baltimore, Md; and the University of Maryland School of Medicine, Baltimore—were listed as having 3- or 4-week electives with up to 6 or 7 hours of class per day. Other typical configurations of complementary and alternative medicine courses were 1 or 2 hours per week for 10, 12, or 15 weeks. Hours devoted to complementary and alternative medicine topics in required courses ranged from 2 to 10, with an average of 4.5 hours.

Predominant departmental affiliations of complementary and alternative medicine courses are shown in Table 1. Nine courses were offered by separate institutes or centers affiliated with uni-

versities or medical schools, such as the Institute for the Study of Health and Illness, which sponsors a course offered by the University of California, San Francisco, School of Medicine; the Center for Spirituality and Healing at the University of Minnesota, Minneapolis; and the Center for Mind-Body Medicine, affiliated with Georgetown University. Five schools listed the sponsoring department as interdisciplinary, integrated, or interdepartmental. Other courses are affiliated with a wide variety of departments, ranging from pathology to the office of the university chaplain.

Sixty-two (91%) of the 68 schools that provided information on academic credit awarded credit to students taking 97 complementary and alternative medicine courses. Eight were noncredit courses and 7 schools (9%) did not provide this information for an additional 18 courses.

The average number of students per elective course was 16, ranging from 5 students or fewer in clinical electives to 40 or more students in several well-established courses. The majority of courses listed were offered to medical students only. In a few interdisciplinary courses, such as nursing, pharmacology, or public health, other graduate or undergraduate students were eligible for enrollment and university credit. Course format and teaching methods are shown in Table 2.

The most frequently cited other educational features included visits to centers offering complementary and alternative medical therapies ($n = 22$) and observational or preceptorial experiences with providers of these treatments ($n = 5$). Among the unique formats offered was a culture, communication, and health day at Allegheny University School of Medicine, Philadelphia, Pa. This feature was included in a required second-year course in community and preventive medicine. Students in groups of approximately 20 met and interviewed 2 consumers of a variety of cultural or religious health belief systems not usually encountered in medical school courses. The student complementary and alternative medicine interest groups at University of California, Davis, School of Medicine and Stanford University School of Medicine, Stanford, Calif, organized a yearly seminar series with lectures and discussions on a broad range of topics.

Several unique teaching methods were reported in addition to the predominant lectures, discussions, and case studies. At the University of Mississippi School of Medicine, Jackson, a 3-hour senior seminar was presented in a required course for 100 medical and 95 pharmacy students, which incorporated lecture and a mul-

tistation teaching exercise. Brown University School of Medicine, Providence, Rhode Island was the only school reporting the use of standardized patients for practice in interviewing about the use of complementary and alternative medicine.

Course requirements varied greatly among the 61 schools reporting these details. Forty-five schools (74%) assigned required readings, and 34 (56%) required a paper or project. Of the 53 schools that provided this information, only 10 (19%) gave a final examination.

From the information provided, only a few courses could be determined to emphasize critical reading of existing research or epidemiological studies. Washington University, Medical School, St Louis, Mo, lists "literature appraisal and discussion" among its major teaching goals, and the elective course in complementary medicine at the University of Maryland is "structured around a strongly evidence-based curriculum." The course at Harvard Medical School, Boston, Mass, emphasizes critical reading of the literature and discussion of data from controlled trials relating to the efficacy and mechanisms of action for specific alternative therapies. As a final required project, each student designs and presents a detailed plan for a controlled clinical trial of a chosen alternative therapy.

A summary description of individual course titles, methods, and teaching formats obtained from the 117 responding medical schools is available on request from the authors.

COMMENT

Medical education is under constant pressure to evolve.⁴ Changes in the medical interview over the past few years mirror this evolution. Where once value-laden issues about human sexual behavior, resuscitation preferences, and domestic violence were considered taboo in the physician-patient dialogue, these topics are now mandatory as a part of responsible medical care. The rapid increase of public interest in and use of complementary and alternative therapies is likewise exerting a powerful influence on medical education.

In a study exploring the attitudes of 180 family physicians, Berman et al¹⁰ found that physicians had a high degree of interest in complementary and alternative medicine. Blumberg et al¹¹ found similar results in 572 responses to a survey of primary care internists. More than half indicated that they would encourage patients who raise the possibility of complementary and alternative medicine, and 57% were willing to refer their patients for treatment for 6 or more complementary and alternative therapies.

In a speech to faculty and students, the dean of Harvard Medical School, Joseph B. Martin, said that he had "come to believe that it is through the establishment of a unique doctor-friend-patient relationship that most of the healing occurs, whether helped along by surgery, acupuncture, or regular doses of approved medicines."¹² A 1995 survey by Carlston et al⁶ of the frequency and nature of alternative medicine instruction in US medical schools and family practice residency programs reported that 33 medical schools and 75 family practice residencies offered instruction in complementary and alternative medicine and additional schools and family practice residencies were planning to add complementary and alternative medicine instruction.

Data collected in our survey demonstrate tremendous heterogeneity in content, format, and requirements among complementary and alternative medicine courses at US medical schools. This area of the medical curriculum is at an early stage of development and appears to have few guiding principles. A daunting aspect of this situation is the sheer number of topics subsumed under the rubric of alternative medicine. In 1992, Murray and Rubel¹³ named 4 basic categories of complementary and alternative therapy and called the field "a muddle of names, beliefs, and practices." A report to the National Institutes of Health named 6 main complementary and alternative medicine categories with up to 11 subheadings,¹⁴ and another report noted that there are more than 150 different therapies with a wide range of philosophies and practices.¹⁰ The difficulty in defining inclusion criteria and terminology to adequately categorize complementary and alternative therapies underscores the need for a coordinated effort to develop acceptable curricula.

In our study, we did not specifically survey topical content, but the curriculum materials provided by 29 medical schools indicate that most include acupuncture, chiropractic, massage, therapeutic touch, homeopathy, nutrition, herbal medicine, and mind-body techniques. Several courses focus on spirituality and faith. Other courses have a public health, epidemiological, or biostatistical perspective, with their principal focus on rules of evidence and critical reading of relevant medical literature. Asian and Native American ethnomedicine is well represented in several courses, while other courses are based on a humanistic or human potential viewpoint. Several schools have courses designed and taught by faculty with a folklore background. Many courses appear to have the objective of introducing the student to the diverse forms of complementary and alternative medicine.

Our survey also did not inquire about complementary and alternative medicine courses at the 19 US osteopathic medical schools. According to information from the American Association of Colleges of Osteopathic Medicine, such courses have been discussed, but data on courses on complementary and alternative medicine are not available (Lorrie Van Akkerson, oral communication, 1998).

The nature of the courses offered in a particular medical school frequently is determined by the interests and familiarity of the course directors and the availability of local practitioners willing to participate with lectures or demonstrations. Although this approach has made many courses possible where they would not otherwise exist, it tends to foster instability and lack of planned coherence in the curriculum.

Students have had an enormous influence on the development of complementary and alternative medicine courses. In addition to the University of Alabama School of Medicine, Birmingham, and University of California, Davis, student groups have been active at the University of Chicago Pritzker School of Medicine, Chicago, Ill; the Indiana University School of Medicine, Indianapolis; Washington University; Harvard University, Boston, Mass; and elsewhere. Frequently, student-initiated "brown bag" lunches with complementary and alternative therapy practitioners mark the beginning of interest in establishing a formal course.

A recent AAMC report on the Medical School Objectives Project refers to the importance of physicians being "sufficiently knowledgeable about both traditional and nontraditional modes of care to provide intelligent guidance to their patients."¹⁵ Clearly, the daunting task is to move toward the establishment of a more coherent approach to complementary and alternative therapies in the medical curriculum. Institutional support is necessary to create and maintain viable and sustainable academic offerings. We did not track these issues, but future surveys should include questions about the curriculum, such as the following: Do the students, faculty, or both initiate the course(s) in complementary and alternative medicine? Do they require curriculum committee approval? Is there a budget and how is it allocated? Are courses scheduled into the formal curriculum or "add-on" electives scheduled over lunch or in evening or weekend hours? Is the course director a paid faculty member or volunteer? Does the school provide administrative/secretarial assistance? What percentage of students per class take the course(s)?

As the discussion of incorporating complementary and alternative medicine topics appropriately into the medical curriculum evolves and broadens among medical faculties and professional organizations, we offer several suggestions based on information gathered in our survey and our experience with 5 years of offering an elective course in complementary and alternative medicine.

1. *Focus on critical thinking and critical reading of the literature.* Accepted scientific rules of evidence must be applied to complementary and alternative medicine and will serve as a sound basis for decision-making concerning the recommendation of any intervention.¹⁶ Evidence-based strategies to distinguish useful from useless interventions can be a central theme.

2. *Identify thematic content (ie, therapies and conditions to be formally addressed) and express the chosen topics in clear, concise learning objectives.* An introductory course would likely include chiropractic, acupuncture, massage, herbal medicine, homeopathy, mind-body therapies, and placebo-related phenomenology as representative of the majority of complementary and alternative practices.¹ Other topics can be added based on student or faculty interest. Physicians and educators can contribute to this discussion through the AAMC Special Interest Group.¹⁷

3. *Include an experiential component.* Experiencing acupuncture or therapeutic massage or tasting a macrobiotic meal adds a dimension to the learning experience that a lecture or simple demonstration cannot. The deeper understanding that results should provide a better basis for responsibly advising patients.

4. *Promote a willingness to communicate professionally with alternative health care clinicians.* Invite clinicians of alternative therapies to share strategies for responsible comanagement. Have students anticipate and develop strategies to address contradictory opinions and recommendations.

5. *Teach students to talk to patients about alternative therapies.* Introduction to clinical medicine or the patient-physician relationship should include opportunities to interact with real or standardized patients in role-play situations involving complementary and alternative medicine. Guidelines emphasizing safety and shared decision making exist for these exercises.¹⁸

In conclusion, patients are increasingly seeking to identify a physician who is solidly grounded in conventional, orthodox medicine and is also knowledgeable about the value and limitations of alternative treatments. The discussion about how best to prepare future physi-

cians for this role is only beginning. As with most newly defined challenges, this role is temporarily ill defined and multifaceted and requires refinement.

As a profession, physicians will increasingly be expected to responsibly advise patients who use, seek, or demand complementary and alternative therapies. We believe the development of a more consistent educational approach to this provocative area is essential.

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