INTRODUCTION

The 1993 study, “Unconventional Medicine in the United States,” by Eisenberg and colleagues elevated the awareness of the conventional medical community to the widespread prevalence, costs, and patterns of use of alternative therapies among patients(1). Increasingly known as “complementary and alternative medicine,” or CAM, this area covers a broad spectrum of both proven and unproven disease treatment and prevention modalities. CAM is used to refer not only to such conceptually accessible therapies as herbal medicines but also encompasses homeopathic remedies, the basis of which is diametrically opposed to the principles of dose-response pharmacology. In some cases, use of alternative therapies is helpful to the patient, or at least benign. However, available information suggests that many types of CAM are not without side effects(2) or drug interactions(3), or may be dangerous indirectly in that patients delay diagnosis of a serious disease by pursuing therapies that have failed to meet the burden of proof of efficacy(4). In addition, pharmacists are faced with the ethical dilemma of balancing the financial demands of the current health care climate with selling alternative medicine products possessing dubious claims, but high profit potential. With the increased involvement of pharmacy in objective patient education and the emergence of our role as pharmaceutical care providers, it is incumbent upon pharmacy education to provide both current and future practitioners with rational information on CAM to enable frank discussion of alternative therapies with patients who are also using conventional medicines.

The pharmacist is unique among the health professions in that he/she is expected to be a source of objective health information, yet many pharmacies offer herbal and homeopathic products without informing the patient of the distinction between these products and other OTC remedies. Even some practicing pharmacists are not aware of that alternative medicines lack the rigorous manufacturing, safety, and efficacy standards required of prescription and OTC drugs. In addition, patients may also seek other unconventional treatments such as acupuncture, naturopathy, Chinese traditional medicine, Ayurvedic medicine, mind-body therapy, or any variety of “touch” therapies without understanding the limitations of each or the potential of some to adversely affect conventional medications they are also taking. It is imperative that pharmacists master the essentials of the complicated and often misleading field of herbal and alternative medicine in order to advise patients on the safe and effective use of the popular remedies or modalities, or to discourage their use for diseases that are not amenable to self-treatment(5).

The patient, on the other hand, is being bombarded with information from the popular news media, print and television advertisements, books, and untrained salespeople, and may not know whom to trust for guidance in choosing or avoiding alternative therapies(6). In fact, a recent Prevention magazine study indicated that patients most often receive their herbal medicine information from friends and family (41 percent), while doctors (nine percent) and pharmacists (four percent) were consulted far less often(7). Pharmacists, in their unique position of public trust and as a crucial liaison between the physician and patient, have a responsibility to assist the patient in distinguishing between the claims and facts surrounding CAM(8).

Why do patients choose alternative therapies anyway? By and large, modern conventional medicine appears to have reached its limits in the minds of many individuals. An increasing majority of patients have never known many of the life-threatening illnesses that conven-

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1Corresponding author.
tional medicine had essentially eradicated earlier in this century. In addition, roughly 40 percent of today’s Americans were born after the thalidomide tragedy which led to the 1962 passage of the Harris-Kefauver Amendment to the Federal Food and Drug Act and the requirement for rigorous preclinical and clinical drug safety and efficacy trials. A conundrum in today’s practice of medicine is that since many diseases can now be managed effectively, we are now left with those, usually chronic, illnesses that are more difficult to treat. Yet when people seek medical attention today they expect perfect and complete results with every visit. When modern medicine has failed, patients seek out other health care modalities that appear to be more promising(9-11).

A few reasons for the resurgence of natural medicines and other alternative therapies have been suggested by DerMarderosian(10) as follows: (i) perceived and real limitations of allopathic medicine; (ii) love (when it works) and hate (when it fails) relationship with high-tech medicine; (iii) lack of tender loving care associated with allopathic medicine (i.e., patients feel they are viewed as “problems” or interesting cases to be solved rather than real people); (iv) endless tests with ambiguous meanings associated with allopathic medicine; (v) a desire to be a partner in healing one’s self; (vi) negative feelings about being sent to various specialists (i.e., desire to have one physician who can treat the whole person and not just a body part); and (vii) a desire to see the practitioner as a trusted friend rather than an authority figure (10). These few reasons should be enough to cause concern in the minds of many health care professionals. To try and change the perception that patients are “problems” or “challenging cases,” we must effectively demonstrate our dedication and commitment to caring for the whole patient - worries, quirks, and all(11).

Pharmacists are clearly assuming a leadership position in health care today. With unconventional therapies rising in popularity each year, pharmacists must be further educated in other health care modalities in order to responsibly fulfill the demands of modern day patient care. Major health insurance plans are already covering alternative therapies and some even require physician referral for reimbursement(12). In the future pharmacists will need to be the information providers for more than just conventional Pharmaceuticals and medical devices. Those pharmacists that do not continue to move forward and keep up, particularly in herbal medicine and especially in combination with conventional medications, could put their patients in danger and the reputation of their profession at risk.

Table I. CAM offerings relative to institutional parameters

<table>
<thead>
<tr>
<th>Respondents offering CAM</th>
<th>Type of institution</th>
<th>Location of school</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>21/31 (68%)</td>
<td>Nonhealth sciences center campus 15/26 (65%)</td>
</tr>
<tr>
<td>Private</td>
<td>15/19 (79%)</td>
<td>Health sciences center campus 15/19 (79%)</td>
</tr>
<tr>
<td>Free-standing institution</td>
<td>5/5 (100%)</td>
<td>Non-health sciences center campus 21/31 (68%)</td>
</tr>
</tbody>
</table>

What is pharmacy education doing to prepare future practitioners to advise patients on CAM? Investigators at the University of Nebraska Medical Center performed a survey in 1996-97 to determine the extent and nature of herbal medicine instruction in pharmacy institutions across the United States(13). However, their survey did not address course offerings in other areas of CAM. We therefore conducted this survey to expand on their idea by determining the degree with which herbal medicine and other alternative medicine areas are accepted and included in the curricula of pharmacy institutions across the country.

RESULTS

Institutional Parameters

The survey instrument was separated into three parts. In the first, basic institutional information was requested such as geographical location, degree options, enrollment, postgraduate career paths, participation in continuing education of other health professions, and percentage of the curriculum devoted to elective coursework. The second part focused specifically on the types of alternative medicine instruction offered, whether the offerings were required or elective, instructor qualifications, instructional methods, and motivations for those schools that offered CAM coursework. The third part allowed respondents to provide any further written comments on areas not covered elsewhere in the survey. The survey was mailed to faculty members in the area of medicinal chemistry/pharmacognosy at the 77 U.S. pharmacy schools listed in the 1997 AACP directory, but addressees were encouraged to pass the survey along to the most appropriate individual in their respective institutions. Follow-up letters and surveys were sent to non-responders eight weeks later.

Thirty-two schools responded to the first mailing with an additional 18 schools responding to the second mailing, resulting in a total response rate of 65 percent. Some of the surveys returned for the study were not fully completed, thus the results discussed for each question are based on the number of schools that actually responded to that item. Sixty-two percent (31/50) of respondents were state institutions, of which 21 schools (68 percent) offer CAM coursework. Thirty eight percent (19/50) were private institutions, of which 15 schools (79 percent) offer CAM coursework.

The physical location of these pharmacy schools varies. Twenty-six schools (52 percent) are located on a non-health sciences center campus, 19 (38 percent) are located on a health sciences center campus and five are free-standing institutions (10 percent) (Table I). Fifteen out of 26 non-health sciences center campuses (65 per-
percent) and 15 out of 19 health sciences center campuses (79 percent) offer CAM instruction. The five free-standing institutions that responded to our survey all (100 percent) include unconventional medicine within their curricula. A comparison of state vs. private pharmacy colleges was also made. Fifteen out of the 19 private schools (79 percent) that responded include unconventional medicine course work into their curriculum. Twenty-one out of the 31 state schools of pharmacy (68 percent) that responded offered coursework of various amounts in their curriculum.

Within the 50 schools that responded, 24 schools offer a BS degree in pharmacy with a total of approximately 6,648 BS students (Table II). Forty-eight schools offer the PharmD program and this number will increase over the next few years, as schools indicated that BS programs will be eliminated and PharmD programs expanded. Thirty-eight schools offer the PharmD program at entry level and account for approximately 7,884 students while 19 schools offer a “track-in” PharmD program accounting for approximately 661 students. Twenty-four schools offer post-baccalaureate degrees accounting for approximately 305 students and 15 schools offer a non-traditional or flexible PharmD program accounting for 784 students. (Table II) The fact that each pharmacy school is in a different professional program would correspond directly with the amount of elective coursework offered overall in the professional program would correspond directly with the probability of a school offering alternative medicine courses. The percent of curriculum dedicated to didactic, elective hours was therefore recorded for the BS or all PharmD programs combined (Table III). In the BS programs, eight schools responded that 0-5 percent of the curriculum was dedicated to didactic, elective hours. Of these eight schools, seven (88 percent) offer CAM coursework in their curriculum. Eight additional schools offering BS degrees devote 5-10 percent to electives and six (75 percent) offer CAM coursework in their curriculum. Five

### Table III. Hours dedicated for electives

<table>
<thead>
<tr>
<th>Percent of curriculum for electives</th>
<th>School responding BS</th>
<th>School responding PharmD</th>
<th>Schools offering CAM courses BS</th>
<th>Schools offering CAM courses PharmD</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>8</td>
<td>16</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>5-10</td>
<td>8</td>
<td>18</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>10-20</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>&gt;20</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table IV. Employment information

<table>
<thead>
<tr>
<th>Current postgraduate position</th>
<th>Percent of recent graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory</td>
<td>56</td>
</tr>
<tr>
<td>Institutional</td>
<td>17</td>
</tr>
<tr>
<td>Residency or fellowship</td>
<td>9</td>
</tr>
<tr>
<td>Home health care</td>
<td>4</td>
</tr>
<tr>
<td>Industry</td>
<td>3</td>
</tr>
<tr>
<td>Managed care</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
</tr>
</tbody>
</table>

### Table V. Continuing education provided by schools

<table>
<thead>
<tr>
<th>For health care practitioners</th>
<th>Number of schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy</td>
<td>44</td>
</tr>
<tr>
<td>Nursing</td>
<td>15</td>
</tr>
<tr>
<td>Medicine</td>
<td>11</td>
</tr>
<tr>
<td>Physician Assistant</td>
<td>6</td>
</tr>
<tr>
<td>Dentistry</td>
<td>5</td>
</tr>
<tr>
<td>Physical Therapy</td>
<td>3</td>
</tr>
<tr>
<td>Chiropractic</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>

Alternative medicine-specific CE

Yes: 21
No: 28

Of PharmD programs combined, 16 schools responded that 0-5 percent of the curriculum was dedicated to didactic, elective hours (Table III). Of these 16 schools, ten (63 percent) offer alternative medicine course work. Eighteen schools responded that 5-10 percent was dedicated to electives. Of these eighteen, 13 (73 percent) offer alternative medicine coursework. Seven schools responded that 10-20 percent was dedicated to electives, and of these seven schools, six (86 percent) offer alternative medicine course work. Two schools responded that >20 percent was dedicated to electives, and both of these schools (100 percent) offer alternative medicine course work in their curriculum. Therefore, BS programs were more likely to offer CAM coursework when the percentage of time devoted to electives was limited, but schools that devote 10-20 percent of their curriculum to electives were highly likely to offer CAM coursework. Overall, BS programs are also slightly more likely to offer CAM coursework (18/24; 75 percent) than PharmD programs (31/48; 65 percent).

Geographically, many schools that offered herbal and/or alternative instruction were found largely in the western part of the United States, although schools with a strong traditional institutional commitment to this area can be found in each region. Of 36 respondents that included some type of CAM instruction into their curriculum, 11 schools were located in the West, 12 schools were in the Midwest, seven schools were in the Northeast, and six schools were in the South. Of the 21 colleges that offer continuing pharmacy education in alternative medicine, Midwestern schools led with the highest percentage (nine of 15 respondents). CAM continuing education was far less prevalent at schools in the West (four of 11), Northeast (three of 10), and South (four of 14). It has been found that the frequent users of unconventional therapies are white Americans in the 25-to-49 year age group, and they are more likely to live in the western U.S.(1). Employment or postgraduate information on the most recently graduated class was also compiled (Table IV). Thirty-nine schools responded to this item. An average of 56 percent were working in ambulatory service (retail, chain, independent), 17 percent in institutional service (hospital), nine percent in residency or fellowship,
four percent in home health care, three percent in industry, three percent in managed care and eight percent in the category “other.” The latter response entailed graduates finding employment in teaching or continuing on in higher education. These results suggested that despite the trend toward all-PharmD curricula, the vast majority of graduates still pursue ambulatory careers, a setting where many CAM products are sold.

Institutions were asked if they offered continuing education to pharmacists and other health care practitioners to determine whether relationships with the other health professions was indicative of the probability of CAM course offerings (Table V). Forty-six schools provided an answer to this item. Forty-four schools offered continuing education for pharmacy, 15 schools for nursing, 11 schools for medicine, six schools for physician assistants, five schools for dentistry, three schools for physical therapy and one school for chiropractic. Three schools answered the category “other,” in which continuing education was offered to occupational therapists, dieticians, and pharmacy technicians.

Of the 21 schools offering continuing education for the other health professions, 14 schools (67 percent) offer continuing education in alternative medicine. We hypothesized that those schools that offer continuing education to other health care professionals will more likely offer continuing education in alternative medicine as well. However, this trend was not evident. Nonetheless, every school that offered continuing education in alternative medicine also offered continuing education in pharmacy.

Specific CAM Course Offerings

Table VI details an overall compilation of CAM course offerings grouped by professional program and CAM area. Respondents were asked to detail their coursework in Western herbal medicine relative to other areas of CAM since the former is most traditionally associated with the pharmacy curriculum. Other alternative medicine areas were specifically delineated as homeopathy, Ayurvedic, traditional Chinese medicine, aromatherapy, acupuncture, iridology, chiropractic, rolfing, but not herbal medicine. Of the 50 schools that responded to our survey, 36 schools (72 percent) offer course work in either herbal medicine or coursework in other alternative medicine areas. Specifically, 30 schools (60 percent) offer herbal medicine coursework and 26 schools (52 percent) offer other CAM coursework (Table VI). Of the 36 schools, 20 (56 percent) offer both herbal medicine and other alternative medicine course work.

We also determined how CAM offerings compared between BS and PharmD programs. These results detailed in Table VI show some general trends. Although BS programs are slightly more likely to offer general CAM coursework (Table III), PharmD programs are more likely to present this information in required courses rather than electives (Table VI). However, the average amount of contact hours spent in both areas was lower in PharmD programs. But as expected, more contact hours are spent in both curricula on herbal medicines than on other areas of alternative medicine.

In determining the distribution of topics discussed in CAM coursework, we asked schools to indicate which areas of herbal medicine and other alternative medicine areas were covered in their curricula (Table VII). With regard to herbal medicine, 29 schools teach Western herbal medicine while 21 schools teach Eastern herbal medicine (traditional Chinese medicine). Of these schools, 20 offer instruction in both Western and Eastern herbal medicine. The top two other areas of alternative medicine covered were homeopathy and naturopathy (a somewhat more conventional medical practice that employs herbs instead of FDA-approved drugs) with fewer schools covering acupuncture, Ayurvedic medicine, aromatherapy, chiropractic, touch therapy, and iridology. Seven schools answered the category ‘other’ and indicated that they also cover topics such as hypnosis, meditation, yoga, biofeedback, reflexology, mind-body synergy, osteopathy, and electromagnetic therapies.

Schools were asked if alternative practitioners were...
used as instructors in the alternative medicine course work (Table VII). Thirty-one schools responded to this item and 14 of these schools (45 percent) indicated that alternative practitioners were used as supplemental instructors. The schools that responded affirmatively indicated a variety of alternative practitioners for instructors, including chiropractors, acupuncturists, hypnotists, psychologists, osteopaths, naturopaths, homeopaths, yoga instructors, massage therapists, chelation therapists, and ethnobotanists.

Table VIII shows that most schools offer CAM coursework in the second or third professional year. For herbal medicine coursework a PhD is more often the primary instructor for the course. However, other areas of alternative medicine are nearly as likely to be taught by a PhD or PharmD faculty member. The areas of specialization of the primary instructor included pharmacognosy (seven schools), medicinal chemistry (six schools), natural products (four schools), and pharmacology (three schools). Schools also indicated the use of practitioners in a variety of other areas of specialization such as clinical geriatrics, infectious disease, oncology, biochemistry, biology, chemistry, community practice, primary care, family medicine, health and wellness, dispensing and OTC, theology, ethics and psychiatry. One school even utilizes an MD who participates in an alternative and complementary medicine clinic as their primary instructor.

We also determined how CAM is being presented throughout pharmacy schools. Six different instructional delivery methods were given as options from which schools were asked to indicate those applicable (Table IX). Thirty-one schools use standard lecture, 17 schools use student oral presentations, 15 schools use video presentations, 14 schools use case-based methods, 11 schools use problem-based methods and nine schools use visitation to alternative practice sites. Seven schools answered the category “other,” in which reading assignments, various projects and research papers were assigned, visitation to health food stores and pharmacies, tea tasting, field botany, slides, a medicinal plant garden, and Web site assignments were given as methods of learning.

Herbal medicine education in the pharmacy curriculum has cycled over the years and alternative medicine education is a fairly recent addition to medical and pharmacy curricula. Therefore, we asked schools that offered CAM coursework to indicate their motivations for adding this area to their programs (Table X). Thirty schools responded that the motivation was from student interest, 27 schools from faculty interest, 23 schools from practicing pharmacy community interest and 21 schools from patient interest. Six schools responded that the motivation came from historic and institutional commitment and two schools said the motivation was due to institutional pressure. One school mentioned that the motivation was simply from “the need for pharmacists to understand other healthcare modalities.”

To summarize, 36 pharmacy schools (72 percent of respondents) reported having either herbal or alternative medicine course work incorporated into their curriculum. This leaves 14 (28 percent) of the 50 respondents not having any type of CAM instruction included into their pharmacy curriculum at this time. Eight schools noted that their curriculum committees are discussing this issue and coursework (or courses) will likely be offered. The majority mentioned they will probably have elective courses become available within the next year while a few schools plan to include the material throughout various courses already established within the pharmacy curriculum. Four schools mentioned that CAM is only being considered at this time. Two schools responded that they have no plans for any type of CAM to be incorporated into their curriculum.

**DISCUSSION AND CONCLUSIONS**

We have found that pharmacy institutions across the United States have a great interest in exposing students to CAM coursework. Although most of the CAM coursework focused on herbal medicine, as detailed in the 1996-97 survey of Miller and Murray(13), we were surprised to learn that coverage of other areas of CAM was almost as prevalent in U.S. schools of pharmacy. Our results were quite similar to those observed from a comparable study of U.S. medical schools where 64 percent reported offering CAM coursework in either elective classes or as parts of required courses(14). But as with our findings from pharmacy schools, the depth of coverage of CAM topics among medical schools was also quite heterogeneous. Those medical schools offering CAM coursework ranged...
Most telling of the national interest in CAM among U.S. pharmacy schools were the comments we solicited on the last page of the survey document. The dean of a Midwestern college of pharmacy commented, “This is the perfect opportunity for a team approach. Go find the nurses, physicians, psychologists, anthropologists, etc. on your campus who are interested in [CAM] - I can guarantee that they are there. Health practitioner students can benefit from an interdisciplinary course. Pharmacy students need to understand [CAM] sufficiently to take a holistic approach to their patients who are probably using [CAM] approaches along with standard therapeutic agents. They need to know a lot more about herbal medicine, especially if they are selling them in their pharmacies. It is unethical in my mind, to sell them without being able to provide advice and information. The emphasis however needs to be on evidence-based medicine. What do we know scientifically, how do we know it, how do we find out?” An associate dean of a Western college of pharmacy commented, “Faculty are somewhat reluctant to discuss these issues since they have not been formally trained. We realize the importance of these areas since our students are using herbs and alternative medicines. Our students need to be knowledgeable in order to treat the “whole” patient. They also need to know how these alternative drugs/methods interact with more traditional treatment modalities.” An associate professor of medicinal chemistry of an Eastern college of pharmacy commented, “It needs to be addressed. Pharmacy students should be made aware of what’s out there, particularly since more pharmacies are marketing herbal remedies without a clue what’s in them.” An associate professor of medicinal chemistry of a Southern college of pharmacy commented, “It is a part of pharmacy history and its interest is gaining nationwide. It, therefore, should be one of the cornerstones supporting a true pharmacy education.”

Devoting time to this topic in the professional curriculum is not without controversy. One professor left a phone message indicating his unwillingness to fill out the survey because “the entire area is a load of bunk and I can’t believe how many of my colleagues are buying into it.” However, most of the respondents voiced a well-balanced opinion similar to one Western professor that, “Alternative medicine requires a good look because so much anecdotal evidence and patient enthusiasm supports its utility for some, particularly chronic, conditions. But, we mustn’t lose sight that we have an ethical responsibility to our patients to be scientists first. Alternative approaches should be evaluated like any other modality and recommended based on solid science-based evidence, not advocacy and rhetoric, or at the very worst, profit potential.” A very recent editorial in the New England Journal of Medicine echoed this concern in that, “Alternative treatments should be subjected to scientific testing no less rigorous than that required for conventional treatments.”(15)

We have found from our survey that herbal medicine coursework is offered in 30 colleges and other alternative medicine coursework was offered in 26 colleges. Of these, 20 colleges offer both herbal and alternative medicine coursework. At this point in time, herbal medicine education, more than other areas of alternative medicine, is experiencing a resurgence into the curriculum of pharmacy schools across the country. Since many schools are considering CAM as part of pharmacy education and curriculum committees are currently developing herbal and alternative medicine coursework, there is the concern that individual pharmacy schools will focus on CAM with unequal emphasis. In point of fact, a private Northeastern pharmacy college already offers a four-week clinical externship rotation in alternative medicine as an elective to their PharmD students covering homeopathy and naturopathy, as well as a three semester hour course in alternative medicine as an elective. In contrast, CAM coursework offered by other schools may only amount to 1.5 contact hours in an elective class. Based on the responses we received, we propose in Figure 1 some general guidelines for CAM education in pharmacy schools.

Clearly, there are many demands for specialty teaching in an already crowded professional curriculum. But, some of the resistance toward spending too much time on CAM in the pharmacy curriculum relates to the stigma that categorizes all of CAM as “quackery.” For example, alternative practices such as homeopathy and iridology are clearly based on scientifically unsound principles and outrageous claims, but little if any solid clinical data(16). However, some herbal medicines possess admirable safety and efficacy profiles in placebo-controlled, double-blind clinical trials(17,18) and often outsell prescription medications in countries like Germany and France (19). Since patients will use CAM whether we like it or not, it may be best for the pharmacist to at least be able to speak intelligently on alternative practices and help the patient differentiate the useful approaches from the fraudulent ones.

Even greater resistance to CAM coursework becomes evident when alternative practitioners are used as instructors. For some, the act of inviting such a practitioner into a school of pharmacy implies that the school endorses the practice being represented. However, many faculty survey respondents indicated that they do not think they are adequately trained to teach all areas of CAM and that using alternative practitioners allows the class to make educated conclusions about each CAM practice. And clearly, avoidance of the information our patients are getting from CAM practitioners is not an effective way to encourage an objective discourse between future pharmacy practitioners and patients who ask about alternative therapies. One would hope that we are doing a good enough job as educators that our second and third professional year students have the requisite tools to distinguish between useful and fraudulent practices. This distinction could certainly be reinforced by a course coordinator-led discussion following presentations by alternative practitioners. However, the bottom line is that regardless of who teaches CAM, the students should have already been instilled with enough ethics, physiology, pharmacology, and the basics of clinical trial design and statistics to ask appropriate questions about the validity of any claims made.

We were surprised to learn that few schools that offer CAM coursework also make use of the Internet for instruction. For many patients, the Internet is a primary source of healthcare information but the quality of information available is highly variable. Desai et al. recently
Fig. 1. Suggested guidelines for CAM coursework in schools of pharmacy

1. All schools should offer at least 6 contact hours on CAM in a required class such as OTC Products, Nutrition, or Medicinal Chemistry. Where herbal medicines are discussed, it would be ideal for instructors to have a background in natural products. The goal of this cursory treatment would be to provide students with basic principles of the major alternative practices, a general discussion of the quality of science to support each practice, and specific references where the student can obtain objective information on each practice. For schools currently lacking coursework in pharmacognosy or natural products, at least half of this time should be devoted to herbal medicines since this is the primary area of exposure to CAM for most practicing pharmacists.

2. Schools should also consider offering a 2-3 semester credit hour elective class in herbal and/or other alternative medical practices for the subset of students who are interested in a more in-depth treatment of the subject. At health sciences centers, such a course would be very amenable to interdisciplinary participation by instructors and students alike.

3. Schools should not necessarily be reluctant to invite alternative practitioners to present lectures to pharmacy students, particularly upper-level students. However, the presenter should have some demonstrated instructional capability and be forewarned that their practice will be discussed with scientific objectivity. Encourage them to supply students with copies of papers from high-quality mainstream medical journals (JAMA, New England Journal of Medicine, Lancet, American Journal of Health-Systems Pharmacy) that occasionally address alternative medical practices in an evidence-based fashion.

4. Enlist the lecturing services of an expert in healthcare law. Each state has its own guidelines on alternative medical practices and pharmacy students should be aware of what types of information they can and can’t give to a patient.

5. As a classroom assignment, encourage students to spend an hour in a health-food or nutritional supplement store. The goal of this exercise would be to address the issue that a patient’s primary information source on CAM products and practices usually comes from individuals not highly trained in pharmacology, toxicology, and pharmacotherapeutics. If they don’t know already, they will be shocked at the amount of “patient counseling” that store clerks perform. Some stores are more responsible than others. Hearing the varying quality of information their patients receive may motivate the student to become better educated in this area.

6. Establish an opportunity for students to communicate with patients about CAM products and practices in real or staged situations. Questioning patients about CAM must be done in a way that is perceived as objective so as not to adversely influence the honesty of their responses. Eisenberg (21) has written a superb article detailing a step-by-step strategy for communicating with patients about their alternative medicine use in a neutral, non-threatening manner.

7. Take advantage of Internet Web sites (good and bad) to discuss criteria for objective, alternative medicine information. Quackwatch (www.quackwatch.com), operated by the National Council Against Health Fraud, is an excellent site with an obvious anti-alternative medicine bias, but has several superb essays that will stimulate class discussion on the misrepresentation and deceptive nature of many alternative practices. Surveying and evaluating the Internet is an excellent way in which to encourage students to develop critical thinking skills.

drew attention to inaccurate and potential harmful drug recommendations they found on the Internet newsgroup sci.med.pharmacy(20), particularly with regard to unorthodox treatments for cancer and AIDS.

In 1993, it was reported that about one in four Americans who see their medical doctors for a serious health problem may have used some form of CAM in addition to conventional medicine for that problem(1). A 1997 study, commissioned by Landmark Healthcare, Inc., showed that the prevalence of alternative medicine use among adults had increased to 42 percent (http://www.landmarkhealthcare.com/constudy.htm). Of greatest concern is that seven of ten such encounters take place without the patient telling their medical doctors that they used unconventional therapy(1). This is where the pharmacist has the opportunity to ask specific questions in patient counseling to uncover the information that may have been missed at the physician’s office. Pharmacists could convince the patient of the importance to communi- cate with their physician openly and discuss all unconventional products and treatments they are currently receiving. Pharmacists should be educated enough to give a scientific-based explanation to their patient as to whether the use of conventional and unconventional therapies, when used simultaneously, is appropriate for the patient’s state or goal. Proper training on herbal remedies and other alternative health care modalities will equip pharmacists to communicate objectively and intelligently with their patients, providing a much higher level of care.

 Delivering information on CAM with evidence that is science-based in a uniform fashion throughout all pharmacy colleges is the remaining challenge. Guidelines for CAM instruction is also a concern at the level of medical education through both the American Medical Association (AMA) and the Association of American Medical Colleges (AAMC)(14). In pharmacy education, the AACP Academic Affairs Committee is currently assessing the implementation of recommended standards.
that are science-based across the board to ensure that pharmacy graduates are able to effectively care for their patients regarding unconventional medicines and counsel regarding possible herb-drug interactions, conflicting therapies, or treatment or prevention tactics. The AACP, in 1998, established a Special Interest Group in complementary and alternative medicine to encourage discussion of these needs. There is also an obvious need for quality continuing education on these subjects for practicing pharmacists to properly equip them for the task, especially with regard to selecting suitable alternative medicine information sources.

The profession of pharmacy is currently at a crossroads where subjective biases, either positive or negative, toward CAM could damage our long-held position of public trust. Pharmacists must possess the knowledge and ethics to provide accurate patient counseling information on CAM products and practices and resist the temptation to sell products of dubious quality or claims, regardless of the economic pressures facing the profession. Conversely, the pharmacists should also remain objective enough to recognize the alternative products and practices whose use is supported by solid scientific evidence. Our survey showed that the majority of the most recent graduates found employment in retail, chain or independent pharmacies where a large portion of herbal remedies in particular are sold. In keeping with our modern role as trusted pharmaceutical care providers, pharmacists have an ethical responsibility to the public to be as knowledgeable about herbal products, and other non-herbal dietary supplements (e.g., CoQ10, glucosamine), as they would for any other conventional medicinal product.

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