

Health Professions Education and Integrative Health Care*

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ABSTRACT

Over the past 3 decades, evidence has accumulated that demonstrates that the US health care system as currently structured is untenable given the cost of health care, poor outcomes associated with this cost, imminent shortages in many categories of health professionals and underutilization of other health professionals. The system also faces other challenges, such as the lack of access to care and a growing demand by consumers for health care that offers choice, quality, convenience, affordability and personalized care. Workforce analyses estimating needs and anticipated shortages of health professionals are projected on the current health care system which generally does not include integrative health care and do not include complementary and alternative medicine (CAM) practitioners. This paper examines the opportunities and implications of going beyond the current paradigm of workforce planning and health professions education and offers recommendations that detail how the health of the public may be served by incorporating an integrative health perspective into health professions education and workforce planning, deployment and utilization.

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INTRODUCTION

Over the past 3 decades, evidence has accumulated that demonstrates that the U.S. health care system as currently structured is untenable given the cost of health care, poor outcomes associated with this cost, imminent shortages in many categories of health professionals and underutilization of other health professionals, lack of access to care and a growing demand by consumers for health care that offers choice, quality, convenience, affordability, and personalized care. It is well established that the U.S. spends far more on health care than any other nation, yet it ranks only 34th in the world in life expectancy and has a higher infant mortality rate than many other developed nations. A recent report on the state of the nation's health workforce by the Association of Academic Health Centers (2008) highlighted what is described as dysfunction in public and private health workforce policy and infrastructure that is contributing to vulnerabilities for the workforce and putting the health of the American public at risk. Issues identified include the following:

- The current system of reimbursement is beset with distortions, inequities and contradictions that have influenced and shaped the health workforce over many years.
- Market initiatives of the last 2 decades have engendered perverse reimbursement incentives that do not address greater societal needs.
- Younger generations are deterred from entering the health professions because of debt, compensation factors, hazardous work environments, and reduced access to education.
- The growth of the U.S. population, its increasing diversity, and the aging of the baby boomers raise concerns about the adequacy of the health workforce.
- A lack of national leadership and alignment exists amongst numerous educational, accrediting, and licensure bodies.
- Health care needs of the public are largely left to the states; state governments are inclined to focus on the specific needs of their populations, without concern for greater national priorities.

A key finding of the 2008 report is that federally funded and national workforce planning commissions have tended to have a limited focus, often concentrating on one profession or a limited series of issues, rather than a broad strategic vision. A recommendation ensuing from this analysis is that a broader, more integrated national strategic vision is needed if complex and urgent health workforce issues are to be addressed effectively.

As comprehensive and bold as this recent analysis is, it falls dramatically short in two respects. While it decries the historical lack of comprehensive workforce planning, it focuses exclusively on conventional health professionals including physicians, nurses, optometrists, pharmacists, dentists, psychologists, public health professionals, podiatrists veterinarians, and other allied health professions (defined as dental hygienists,

occupational, physical, and respiratory therapists and physician assistants). It does not include chiropractors, naturopathic physicians, traditional Chinese medicine practitioners or any other type of CAM practitioner. Nor does it describe what workforce needs might look like if we had a different vision of health care, one that includes for example, integrative health care. The report implicitly presumes that we need more of what we have. This approach is consistent with that taken by the National Center for Health Workforce Analysis (2008) in the Bureau of Health Professions in the Health Resources and Services Administration (HRSA), the federal agency responsible for collecting, analyzing, and disseminating health workforce information and facilitating national, state and local workforce planning efforts.

As interest in integrative health care and the use of complementary and alternative therapies by consumers has continued to grow, concern has increased that health professionals be sufficiently informed about integrative health that they can effectively care for patients. Among various professional groups, debate continues as to what constitutes sufficient information. Various national panels and commissions have examined this issue and recommendations have emerged, some of which are beginning to impact the education of health professions.

This paper will attempt to go beyond the current paradigm of workforce planning and health professions education and will:

- Review recommendations for curricular reform that have emerged from the Institute of Medicine (IOM) panel on Health Professions Education, the IOM Panel on Use of Complementary and Alternative Medicine, the White House Commission on Complementary and Alternative Medicine and the National Education Dialogue.
- Summarize efforts by National Institutes of Health National Center for Complementary and Alternative Medicine (NIH NCCAM) to stimulate curricular reform in both conventional and CAM institutions.
- Examine the educational preparation and work force structure of representative CAM and biomedical professions and efforts within the professions to make curricular changes that advance integrative health care.
- Review data on attitudes of health professionals toward integrative health care, conventional medicine, and CAM
- Identify strategies impacting health professions education including the development of competencies and interdisciplinary education initiatives at the undergraduate and graduate level.
- Discuss the implications of changing care models on workforce needs and the focus and demand for health professions training.
- Offer recommendations that will advance integrative health care and enable the U.S. to move from the current health care system that is sporadic, reactive, disease oriented and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment, and focuses on the full range of physical, mental, and social support needed to improve health and minimize the burden of disease.

There are a number of different definitions of integrative health and integrative medicine commonly used. The Bravewell Collaborative (2008) describes integrative medicine as having the following characteristics:

- Patient-centered care and focuses on healing the whole person – mind, body, and spirit in the context of community.
- Educates and empowers people to be active participants in their own care, and to take responsibility for their own health and wellness.
- Integrates the best of Western scientific medicine with a broader understanding of the nature of illness, healing, and wellness.
- Makes use of all appropriate therapeutic approaches and evidence-based global medical modalities to achieve optimal health and healing.
- Encourages partnerships between the provider and patient, and supports the individualization of care.
- Creates a culture of wellness.

The Consortium of Academic Health Centers for Integrative Medicine (2005), a consortium of 42 medical schools, offers the following definition: “Integrative medicine is the practice of medicine that reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic approaches, health care professionals and disciplines to achieve optimal health and healing.” Many health care providers who practice whole person, relationship-based care that embodies the characteristics described in the above two definitions do not identify their practice as being medicine-based, viewing that word as focusing on the discipline of medicine. Boon et al, (2004) describe integrative health care as an interdisciplinary, nonhierarchical blending of both conventional and complementary and alternative health care that provides a seamless continuum of decision-making, patient-centered care, and support. According to Boon and colleagues, integrative health care is based on a core set of values, including the goals of treating the whole person, assisting the innate healing properties of each person, and promoting health and wellness and the prevention of disease. It employs an interdisciplinary team approach that is guided by consensus building, mutual respect, and a shared vision of health care. For the purposes of this paper, integrative health care will be used to describe a healing oriented approach that encompasses the above definitions. The term integrative medicine will be used more narrowly when referring to the education and practice of medical doctors. CAM is a term that is used to describe a group of diverse medical and health care systems, practices and products that are not considered to be part of conventional medicine. CAM includes a wide variety of disciplines and practices, ranging from licensed chiropractors, naturopathic physicians and traditional Chinese medicine practitioners to yoga or meditation teachers. In this paper we will distinguish between the licensed CAM fields and those that are not.

CURRICULUM REFORM RECOMMENDATIONS

Over the past ten years, several multidisciplinary national panels including the IOM Committee on Health Professions Education, the IOM Committee on Complementary and Alternative Medicine, the White House Commission on Complementary and Alternative Medicine, and the National Education Dialogue have made recommendations for specific reforms to address some of the pressing problems in the education of health care professionals. Recommendations have addressed some of the deficiencies in cross-discipline understanding and communication which have contributed to the “quality chasm” described by the IOM in 2001.

The IOM Committee on Health Professions Education (IOM, 2003), although it did not specifically address the issue of integrating CAM professions with “conventional,” put great emphasis on the need for team-based, interdisciplinary educational strategies as a means to reduce medical error and improve health care quality. The committee stated as its overarching vision for education of health professionals, that “all health professionals should be educated to deliver patient-centered care as members of an interdisciplinary team, emphasizing evidence-based practice, quality improvement approaches, and informatics.” It also recommended that a set of shared competencies across all health care professions, focused on patient-centered care, be required by regulatory bodies governing education in the various disciplines.

The IOM Committee on Complementary and Alternative Medicine recommended that all conventional health professions training programs incorporate sufficient information about CAM into the standard curriculum to enable licensed professionals to competently advise their patients about CAM (IOM, 2005). It did not specifically address the need for CAM professionals to have basic information about the conventional disciplines, but did stress the need for more research training for the CAM professions as a way to bridge the gap in communication between disciplines.

The White House Commission on CAM (2002) made several specific recommendations regarding training, including the following:

- The education and training of CAM and conventional practitioners should be designed to ensure public safety, improve health, and increase the availability of qualified and knowledgeable CAM and conventional practitioners and enhance the collaboration among them.
- CAM and conventional education and training programs should develop curricula and other methods to facilitate communication and foster collaboration between CAM and conventional students, practitioners, researchers, educators, institutions, and organizations.
- Increased federal, state, and private sector support should be made available to expand and evaluate CAM faculty, curricula, and program development at accredited CAM and conventional institutions.

Finally, the report from the National Education Dialogue (NED), a multidisciplinary group of educators from health care disciplines including nursing, medicine, acupuncture and traditional Chinese medicine, naturopathic medicine, chiropractic, and massage recommended a process to identify and promote the development of interinstitutional training relationships, stating that “students educated in an environment of mutual respect and collegiality among disciplines will be more likely to practice collaborative health care” (NED, 2005). The proceedings of this meeting in 2005 included a survey documenting a substantial degree of interest in interaction/exchange between medical schools affiliated with the Consortium of Academic Health Centers for Integrative Medicine (CAHCIM) and CAM schools. As noted by Weeks (2006), approximately 85 percent of respondents from both medical and CAM schools agreed that creating a fully integrated healthcare system will require that institutions and programs develop stronger, multi-dimensional, interinstitutional relationships with programs of the other disciplines. Like the IOM Committee on Health Professions Education, the NED participants recommended the development of a set of shared competencies/values across disciplines which would ultimately be required for every discipline and thus would lay the groundwork for more effective collaboration.

NIH NCCAM R-25 GRANT PROGRAMS

The National Center for Complementary and Alternative Medicine (NCCAM) was established in 1998 at the National Institutes of Health (NIH) in response to public interest in complementary and alternative medicine (CAM). Public Law 105-277 authorized NCCAM to conduct scientific research, train researchers, and disseminate authoritative information about CAM to the public and health professionals. In 1999, NCCAM initiated a program called the Complementary and Alternative Medicine Education Project, the goal of which was to incorporate CAM information into the curriculum of selected health professions schools. The details of this program are described in a recent article by Pearson and Chesney (2007). Between 2000 and 2003, 14 schools in the U.S. and the American Medical Students Association received grants of up to \$300,000 per year in direct costs with a maximum duration of 5 years. Twelve grants were awarded to medical schools or programs focused on education of more than one discipline and 2 were awarded to schools of nursing. As noted by Pearson and Chesney, the emerging goals from these CAM curriculum efforts were that conventional health care providers, as part of an integrative health care environment, would have sufficient knowledge and skills to:

- Know how to ask patients about their use of CAM or integrative medical practices.
- Be familiar with the most commonly used forms of CAM so they can discuss these practices with their patients.
- Be able to refer interested patients to reliable sources of information.
- Know how to obtain reliable information about the safety and efficacy of CAM or integrative medical practices.

The October 2007 issue of *Academic Medicine* was devoted to a series of articles on the CAM Education Project grants. Detailed information is available on the rationale and focus of student learning (Gaylord and Mann, 2007; Gaster et al., 2007); organizational and instructional strategies (Lee et al., 2007); barriers, strategies and lessons learned (Sierpina et al., 2007); strategies to foster student self awareness (Elder et al., 2007); evaluation of CAM education programs (Stratton et al., 2007); and collaborative initiatives between allopathic and CAM health professionals (Nedrow et al., 2007).

NCCAM initiated a second series of R-25 grants in 2004 that focused on the goal of increasing research content in CAM practitioner programs that offer a doctoral degree in a CAM practice. The CAM Practitioner Research Education Project Grant Partnership required that a CAM school partner with a research intensive university to develop curricula. The major focus of curricular efforts is research literacy and the integration of content on evidence-based or informed practice. Awards were made to 9 institutions that included institutions offering chiropractic, naturopathic and TCM.

A common finding among all of the institutions awarded grants under the R-25 program is that while these grants were titled curriculum grants, at the core, the focus without exception has also been on fostering culture change. This has required extensive faculty development and it is widely acknowledged that change of this nature takes significant time, requiring engagement of leadership, faculty, and students.

HEALTH WORKFORCE STRUCTURE AND EDUCATION

Education of health professionals occurs in a wide variety of public and private settings. Within some academic programs preparing physicians and nurses, information on integrative health and medicine is taught in required or elective curricula. Topics commonly addressed include relationship-based care, whole person care (i.e. mind, body and spirit), complementary and alternative medicine and self-care. Organizations such as the CAHCIM, a consortium of 42 medical schools with integrative medicine programs, and the NCCAM R-25 education grants have accelerated curriculum innovation.

Integrative health care is also practiced by a number of practitioners, often referred to as CAM practitioners. These practitioners vary considerably in educational preparation, scope of practice and licensure to such an extent that a generic term such as CAM is not particularly descriptive or useful. Recently, the term natural medicine has been associated with educational programs in licensed fields of chiropractic, naturopathic medicine, TCM and massage therapy. While the major focus of these educational programs is content related to the respective area of specialization, to varying extents, information is also taught on self-care, whole person care, evidence-based or informed practice, relationship-based care, and other aspects of integrative health care. Content on interdisciplinary or team care is generally not adequately addressed in either the CAM or conventional health care educational institutions/programs.

In an effort to highlight the diversity and complexity of the U.S. health care workforce and the opportunity that we face to advance the health of the public by fully utilizing health professionals prepared in integrative health care, we have chosen to profile two biomedical professions (medicine and nursing) and four licensed disciplines in natural medicine (chiropractic, naturopathic medicine, TCM and massage therapy). While this is not an exhaustive review that includes all biomedical and CAM disciplines, it is intended to be illustrative of the strengths, weaknesses, challenges, and issues faced within health professions education that both impede and advance integrative health care.

Medicine

Medicine (also known as “biomedicine,” “allopathic medicine,” and “conventional medicine”) is an approach to health care which applies scientific principles and findings from medical research to treat specific disease conditions and prevent illness. The most commonly used strategies in conventional medicine involve the use of pharmaceuticals, surgical procedures, and other technologically advanced interventions. There is a strong belief in conventional medicine that most, if not all, diseases can ultimately be determined to have a physical cause, whether this cause is biochemical, infectious, genetic, or traumatic. Influences of mind and spirit on overall health have been generally not emphasized in medical training and approach outside of the specialty of psychiatry, although this has changed to some degree in the past two decades. Medical doctors trace the history of their profession back to Hippocrates; however, the current scientific approach to medicine really began in the late nineteenth century.

Primary care physicians include family practitioners, internists, pediatricians, and gynecologists, and are generally the first point of contact for patients with the health care system and have an explicit focus on prevention as well as treatment of disease. Specialists including surgeons, dermatologists, physiatrists, radiologists, and many others, typically focus on the application of a specific approach to the treatment of disease. Subspecialists include cardiologists, oncologists, gastroenterologists, and many other disciplines generally focused on the diagnosis and treatment of dysfunction in one specific organ or organ system.

Medical doctors must graduate from an accredited medical school and pass a licensing exam given by the United States Medical Licensing Examination (USMLE). There are 130 accredited medical schools currently in the United States. The curriculum includes courses in anatomy, biochemistry, pharmacology, physiology, and genetics, and medical doctors in training must complete “rotations” in the major disciplines including medicine, pediatrics, psychiatry, surgery, obstetrics/gynecology, and family practice prior to graduation from medical school. After one year of postgraduate training they may apply for a license in their state; licensing is state-specific and medical doctors must apply for licensing in each state in which they wish to practice. Board certification in a given specialty requires completion of an accredited residency in that specialty; residency programs can range in length from 3 to 7 years. Board certification also requires passing an exam developed by a specialty recognized by the American Board of Medical

Specialties. At this point, many specialties require recertification at intervals of 7-10 years. Subspecialty certification generally requires an additional one to three years of fellowship training.

As of 2006, there were approximately 633,000 physicians employed in the U.S. (U.S. Department of Labor, 2008). The American Medical Association data from 2005 show that approximately 40 percent of physicians were in a primary care specialty, and 60 percent in subspecialties (American Medical Association, 2007). Data suggest that some geographic areas have significant shortages of primary care physicians (Fryer et al., 2004). Historical data also show that major health outcomes including all-cause mortality, cancer, heart disease, stroke, and infant mortality; low birth weight; and life expectancy are significantly better in areas with adequate access to primary care (Macincko et al., 2007; Starfield et al., 2005). The concept of the “medical home,” currently gaining momentum in the health care system is based on this data regarding the importance of an identified source of primary care. To date, no data definitively suggest that this primary care must be delivered by a medical doctor.

Services of medical doctors are generally reimbursed by insurance companies. In recent years, due to delays in payments from insurers and inadequate reimbursement levels, many physicians have begun to “opt out” of insurance plans. This has compounded the problems with access to medical care created by the large percentage of uninsured in the U.S. population.

Since the publication of Eisenberg’s work documenting the extent of use of CAM in the U.S. population (Eisenberg, 1998), there has been a movement to incorporate basic knowledge on CAM into conventional medical education. As of 2003, 98 of 126 U.S. medical schools have incorporated at least some teaching on CAM into their curricula (Barzansky and Etzel, 2003). However, many of these offerings were elective rather than required, and the true impact of these curriculum offerings on attitudes and practices of physicians has not been systematically evaluated.

The first set of published guidelines on CAM in conventional medical education curriculum was developed for residency-level training by the Society of Teachers of Family Medicine in 2000 (Kligler et al., 2000). Of all the medical specialties, family medicine as a discipline—perhaps because of its basis in the biopsychosocial model and the “whole person” perspective that engenders—has been the most open to exploring new strategies to teach trainees about integrative approaches. Post-graduate level training in family medicine—both at the residency and fellowship levels—has proved a relatively receptive environment for integrative medicine training programs. An exciting recent development, spearheaded by the Center for Integrative Medicine at the University of Arizona, is the Integrative Medicine in Residency program (IMR). The IMR is a 250-hour internet-based curriculum in integrative medicine designed for family medicine and other primary care residents which is currently being piloted for feasibility and effectiveness at 8 residency programs around the country.

The IMR program grew out of another important innovation, again led by the Arizona Center: the Integrative Family Medicine program. This program, which combines fellowship level training in integrative medicine with family medicine residency training, has been running at 6 residency sites since 2003, and has trained over 30 fellows (Maizes et al., 2006). The IFM has been an excellent laboratory to develop educational strategies as well as competency-based evaluation tools for the incorporation of CAM training into conventional medical post-graduate education (Kligler et al., 2007).

Another development on the postgraduate national landscape was the formation of the American Board of Integrative Holistic Medicine (ABIHM), which was formed in 1996 as an independent credentialing body for physicians in this field. Although ABIHM is not recognized by the American Board of Medical Specialties and therefore does not represent an “official” board certification in the eyes of orthodox medicine, it does represent a serious effort to establish standards for certification in this area for physicians. To date 1,040 physicians have received ABIHM Diplomate designation.

Although many medical schools now offer at least elective courses in CAM and integrative health care, undergraduate medical education has been a more difficult challenge for integrative medicine educators. Over the past 6 years CAHCIM has been very active in trying to promote curriculum reform and to move towards goals outlined by the previous IOM committees, the White House Commission, and the NED process. In 2004, a set of consensus guidelines for undergraduate medical education in integrative medicine was published in *Academic Medicine* (Kligler et al., 2004). This document, a collaborative effort between educators at thirteen medical schools, incorporated a set of core values critical to education in integrative medicine as well as a set of knowledge, skills, and attitudes. Although this document provides a useful set of tools for educators, to date its curriculum recommendations have not been widely implemented.

A recent small step forward resulted from an exchange between CAHCIM and the Liaison Committee on Medical Education (LCME), the accrediting organization for U.S. medical schools. CAHCIM proposed specific changes to 3 LCME Educational Accreditation Standards, with the aim of more explicitly requiring medical schools to include teaching on integrative medicine in their required curriculum. The proposed changes would have incorporated modifications into the mandated educational standards regarding multidisciplinary content areas, communication skills, and cultural competence—all areas in which education in integrative health care would naturally fit. Although the LCME did not agree to revise any standards, it did take a step forward by adding the topic of “complementary and alternative health care” to the list of topics addressed in the LCME Medical Education Database relative to accreditation standard ED-10 for schools anticipating survey visits scheduled for 2009-2010 and thereafter. (LCME, 2008) This educational standard mandates the inclusion of behavioral and social sciences in the curriculum, and details a list of subjects in this area considered important for physicians. As part of the LCME survey (LCME Part II Annual Medical School Questionnaire), schools will now be asked to identify where in their curriculum CAM is covered (required vs. elective course or clerkship) and how many sessions are dedicated to this topic.

This change in LCME policy represents progress; however, it falls short in that it still does not specifically mandate required exposure to CAM or integrative health care. The recommendation as it stands does not ensure achievement of the recent IOM recommendation for physicians to emerge from training “competent to advise” patients on CAM. As such, further steps by the LCME mandating required coverage of this area in the medical school curriculum will be needed if we are to reach this outcome.

Nursing

While the role of nurses, their educational preparation, and the settings in which they practice have evolved over time, the focus of nursing has remained fairly constant. Florence Nightingale, the founder of modern nursing, described the work of the nurse as helping the patient attain the best possible condition so that nature could act and self-healing could occur (Dossey, 2000). The focus of the art and science of nursing goes beyond fixing or curing to ease the edges of patients’ suffering, to helping them to restore function, maintaining patient health, aiding those living with chronic illness, or supporting patients through a peaceful death. Nurses are experts in symptom management, care coordination, health promotion and chronic disease management. In addition to caring for people from birth to death, they are also prepared to plan and manage care for communities, conduct research, manage health systems and address health policy issues.

Much of what is now called CAM or complementary therapies has fallen within the domain of nursing for centuries. Nurses are educated to be holistic practitioners – attentive to the whole person, the mind, body and spirit. Academic programs in nursing routinely include information on massage, music, imagery, energy healing, meditation and relaxation therapies, and use of essential oils.

Nurses constitute the largest group of health care professionals in the nation. They are academically prepared in several ways. Nurses educated in 2 year associate degree or 3 year diploma program are eligible for registered nurse (RN) licensure and most commonly work in hospitals, long term care facilities and out-patient (clinic) settings. Baccalaureate prepared nurses or nurses who attain entry into practice in accelerated MA programs are also eligible for RN licensure and work in public health as well as the settings noted above. They are also more likely to assume leadership roles. Two agencies provide accreditation to nursing programs: the Commission on Collegiate Nursing Education (CCNE) and the National League for Nursing Accrediting Commission (NLNAC). CCNE accredits baccalaureate and graduate education programs. NLNAC accredits diploma, associate, baccalaureate and master’s degree nursing programs. State licensing authorities regulate entry into the practice of nursing. Candidates for licensure as an RN are required to pass the National Council Licensure Examination-Registered Nurse (NCLEX-RN) exam developed by the National Council of State Boards of Nursing (NCSBN).

The nurse practitioner (NP) role emerged in the mid 1960s as a cost-effective approach to address the nation's primary care needs during an era of projected physician shortages. NPs complete a graduate level education program that prepares them for practice in their area of specialty and are licensed independent practitioners. NPs provide primary care in a wide variety of settings including adult health, pediatrics, family, gerontological, and women's health care. NPs are also prepared in specialty areas such as mental health, neonatal care and acute care. They are prepared to diagnose and treat patients with undifferentiated symptoms as well as those with established diagnoses. NPs provide initial, ongoing, and comprehensive care that includes taking health histories, providing physical examinations and other health assessment and screening activities, and diagnosing, treating, and managing patients with acute and chronic illnesses. This includes ordering, performing, supervising, and interpreting laboratory and imaging studies; prescribing medication and durable medical equipment; and making appropriate referrals for patients and families. NPs have prescriptive authority in all states. The scope of practice of NPs includes health promotion, disease prevention, health education, and counseling as well as the diagnosis and management of acute and chronic diseases. It is estimated that NPs can effectively manage 80 percent of patients' primary care needs. In 2 meta-analyses (Brown and Grimes, 1995; Horrocks et al., 2002) of over 35 studies, comparable care outcomes were attained by MDs and NPs. The most recent Health Resources and Services Administration (HRSA) Survey report (2005) estimates 141,209 nurse practitioners in the United States, an increase of more than 27 percent over 2000 data. The actual number of nurse practitioners in 2006 is estimated by the American College of Nurse Practitioners (2008) to be at least 145,000.

A report on competencies of nurse practitioners in primary care settings prepared for HRSA in 2002 by the National Organization of Nurse Practitioner Faculties (NONPF) and American Association of Colleges of Nursing (AACN) (2002), contains no explicit reference to content on integrative health/medicine. However, a survey by Burman (2003) of family nurse practitioner program directors found that 98.5 percent of the 141 respondents reported that their FNP programs included CAM-related content and that 83 percent integrated CAM content into existing courses.

Certified nurse-midwives (CNMs) provide a full range of primary health care services to women throughout the lifespan, including gynecologic care, family planning services, preconception care, prenatal and postpartum care, childbirth, and care of the newborn. Like NPs, CNMs are nurses with graduate preparation and are licensed, independent practitioners who have prescriptive authority. Nurse-midwives provide care in many settings including hospitals, birth centers, and a variety of ambulatory care settings including private offices, community and public health clinics and homes. A recent Cochrane review (Hattem et al., 2008) of 11 trials (12,276 women) found that women who had midwife-led models of care were less likely to experience antenatal hospitalization, regional anesthesia, episiotomy, and instrumental delivery and were more likely to experience spontaneous vaginal birth and initiate breastfeeding. Women randomized to receive midwife-led care were less likely to experience fetal loss before 24 weeks gestation and their babies were more likely to have a shorter length of hospital stay. The review concluded that all women should be offered midwife-led models of care

and should be encouraged to ask for this option. The American College of Nurse Midwives (2007) in a document titled *Core Competencies for Basic Midwifery Practice*, describes the evaluation and incorporation of complementary and alternative therapies in education and practice as a hallmark of midwifery practice in all settings for midwifery care including hospitals, ambulatory care settings, birth centers and home.

NPs and nurse-midwives are advanced practice registered nurses (APRNs), as are nurse anesthetists and clinical nurse specialists. APRNs attain certification in their specialty and practice within standards established or recognized by professional associations and licensing bodies. Currently, no uniform model of APRN regulation exists across the states. Each state independently determines the APRN legal scope of practice, the roles that are recognized, the criteria for entry-into advanced practice, and the certification examinations accepted for entry-level competence assessment. This has created a significant barrier for APRNs to easily move from state to state. The graduate preparation for APRNs has historically been a master's degree. Over the past 5 years, there has been a transition to a clinical doctorate degree, the doctorate of nursing practice (DNP).

Integration of content on integrative health/medicine into other graduate nursing programs varies considerably. Many graduate programs in nursing teach content on integrative health/medicine as it relates to health promotion, lifestyle coaching, and disease management. A more recent trend has been to develop graduate programs in nursing that have integrative health as a major area of emphasis. The University of Portland offers a DNP program with a Family Nurse Practitioner specialty that includes an emphasis on integrative health. New York University College of Nursing offers a masters level adult holistic health nurse practitioner program. At the University of Minnesota School of Nursing, integrative health is integrated into all 14 DNP specialty programs including adult health, women's health, midwifery, and public health. Additionally, a DNP in Integrative Health and Healing was developed to prepare practitioners and leaders who can work within a wide variety of clinical settings with diverse patient populations and provide leadership within organizations.

Nurses prepared at the PhD level are skilled in conducting research. As integrative health care becomes a more visible and prominent area of focus within nursing programs, it is anticipated that doctorally prepared faculty and clinicians will contribute to the evidence-base of CAM and integrative health care.

According to the American Association of Colleges of Nursing (AACN) (2008), the U.S. has a severe nursing shortage that is expected to intensify as the need to health care grows with the aging of the baby boomers and as the need for health care grows. The shortage of RNs could reach 500,000 by 2025. Nursing colleges and universities are struggling to expand enrollment levels to meet the rising demand for nursing care, a situation made more challenging by a shortage of nursing faculty.

Chiropractic

Chiropractic is a 113 year old primary (first contact) health care profession that developed in the U.S. Chiropractic practitioners focus on the neuromusculoskeletal system, especially the spine, to manage related conditions and to enhance general health and wellness. Surveys have found that chiropractic care is used overwhelmingly by patients with pain complaints related to joints, muscles and other somatic tissues, though a significant fraction of patients also use chiropractic care to enhance their well-being and quality of life (Meeker and Haldeman, 2002). Doctors of Chiropractic (DC), by statute and choice, generally practice a drugs-free hands-on approach that includes the full range of standard case-management behaviors including the application of broad diagnostic responsibilities and skills. Chiropractors are well-known as experts in the biomechanical science and art of manual manipulative procedures known as “chiropractic adjustments” but they are trained to recommend therapeutic and rehabilitative exercises, as well as provide nutritional, dietary and lifestyle counseling. DCs are trained to work well with other professionals when patients’ needs can most benefit from a coordinated approach, and to refer to medical specialists as appropriate.

Approximately 70,000 licensed DCs in the U. S. handle over 190 million visits annually, providing care to an estimated 7-10 percent of the population, which compares favorably with the approximately 380 million visits made to primary medical care providers (Eisenberg et al., 1998). Chiropractors are concentrated in urban areas, but some also serve as the only primary health care providers in rural medically-underserved areas (Smith and Carber, 2002). The profession experienced considerable growth through the mid 1990s, but this has slowed to modest growth projections through the next decade. However, the profession is expanding at a strong rate outside of North America.

The profession of chiropractic began in Iowa in 1895 when D.D. Palmer coined the word to describe a theory of health and disease that incorporated spinal manipulation as a major part of the approach. Forms of joint and soft tissue manipulation have been components of traditional treatments dating back thousands of years, but Palmer claimed to have perfected the art and professionalized the practice. He established the Palmer College of Chiropractic in 1897, the largest and oldest chiropractic institution in the world. Over the course of the next 7 decades, chiropractic became a legally licensed profession one state at a time, often experiencing considerable political resistance from conventional medicine (Meeker and Haldeman, 2002).

Effective political lobbying and patient support caused Medicare to begin limited reimbursements for chiropractic care in the early 1970s. Around the same time, chiropractic education was officially accredited by the U.S. Department of Education through the Council on Chiropractic Education (CCE). In 1987, the profession won a decade long legal battle against the American Medical Association for antitrust violations. In 1994, HRSA began to fund chiropractic institutions to conduct research, which was followed in 1997 with significant center grant funding by NIH NCCAM. Chiropractic scientists were appointed to serve on NCCAM’s National Advisory Committee, on NIH study sections, and on other policy-making bodies.

Practitioners, scientists and policy-makers have become increasingly aware that a reasonable body of credible scientific evidence was accumulating concerning the benefits of spinal manipulation for spine-related pain (Bronfort et al., 2008; Chou et al., 2007), a major public health concern (Dagenais et al., 2008). This was initially codified in a clinical guideline published by the U.S. Agency for Health Care Policy and Research in 1994 (Bigos et al., 1994). Within the past decade, chiropractors have been officially positioned in the Veteran's Health Administration and Department of Defense facilities. Chiropractic is now so widely acknowledged and used by the public for spine-related conditions and embedded in some standard health delivery and reimbursement systems, that it can be characterized as standing at the "crossroads between alternative and mainstream medicine" (Meeker and Haldeman, 2002).

Philosophically, chiropractic is based on the premise that the body contains an "innate" healing ability, and that a drugs-free, hands-on "natural" approach best enhances this healing response. The emphasis tends to be on wellness and quality of life, working with patients' environments and motivations to reach the highest level possible of pain-free function. The "personality" of chiropractic care leads to very strong doctor patient relationships, which have been described in many studies noting high levels of patient satisfaction (Cherkin and MacCornack, 1989; Carey et al., 1995). Strong support by patients has probably contributed to chiropractic's current position as the most widely utilized profession-based "CAM" practice in the U.S.

Chiropractors are licensed and accordingly regulated in all states after the completion of what is typically a 4-5 year academic program conferring the DC degree, and the passing of a 4-part progressive standardized set of didactic and practical examinations administered by the National Board of Chiropractic Examiners, the principal testing agency for the profession. Most states require annual continuing education credits to maintain licensure. DCs are now recognized in most public and private reimbursement systems and within the past decade the profession's institutions have begun to be included in some federal programs as potential recipients of programmatic support for education, practice, and research.

Currently 17 chiropractic training institutions in the U.S. are accredited by the CCE. All but 2 colleges are also accredited by regional accrediting bodies as well. Most are free-standing, non-profit organizations but at least 2 are programs contained within larger colleges or universities. During the past decade, at least 4 chiropractic institutions have also initiated or incorporated training programs for other types of CAM practitioners such as massage, acupuncture, and naturopathy. Students entering chiropractic programs must have successfully completed at least 90 credit hours (3 years) of undergraduate coursework that must include specific hours in basic sciences and humanities. Approximately 75 percent of entering students have baccalaureate degrees. The DC curriculum of 4,200 minimum hours is similar to a medical school curriculum but emphasizes neuromusculoskeletal conditions and biomechanical interventions over pharmacology. Chiropractic institutions are increasingly embracing the evidence-based care paradigm of making clinical decisions based on best available scientific evidence, clinical experience, and patient preferences. Practical experience is required in public

teaching clinics as opposed to hospital internships. National board exams are required at specified points during the educational journey, and are necessary for final state licensure as described above. Postgraduate specialty certification is available in radiology, rehabilitation, sports, nutrition, pediatrics, orthopedics, neurology, and others, usually after the completion of courses, a residency, and a standardized examination.

Chiropractic has the most highly developed educational system of the 4 licensed CAM professions in the U.S. being profiled in this paper. The most visible current reform efforts are being driven by the accrediting body, the CCE, and by recent educational program grants (R-25) awarded by NCCAM to 4 schools to increase scientific content and critical thinking skills in the curricula. In all schools there is a general movement to increase training in evidence-based practice (EBP) concepts and to incorporate the knowledge, attitudes, and skills of EBP into the clinical component of the education. In concert with evolving educational practices, there is a growing institutional emphasis on institutional assessment of learning outcomes. Chiropractic institutions have nurtured a scholarly community that meets annually under the auspices of the Association of Chiropractic Colleges to share data, programs and experience. Educational research is published in the *Journal of Chiropractic Education*.

While not directly related to integrative health care goals, the advent of federally-funded basic and clinical research grant awards to chiropractic institutions starting in the 1990s has contributed significantly to the evolution of the nascent scholarly culture. During the past decade, the government awarded approximately \$40 million to support chiropractic related research, much of it in projects requiring scientific collaborations with established universities. *The Journal of Manipulative and Physiological Therapeutics*, the premier research journal of the profession, dates back to 1978, and is widely regarded in the generic physical medicine community. Faculty development is now receiving special attention as never before. For example, the Palmer Center for Chiropractic Research received a K-30 NIH grant in 2001 to establish a Master of Clinical Research degree to train chiropractors to conduct high quality clinical research, and has been successful in placing graduates in scholarly positions. In addition, Palmer recently established the Center for Teaching and Learning for its 3 campuses to develop and execute focused faculty development efforts using emerging educational technologies. With regard to interdisciplinary training and experience, the majority of chiropractic institutions either have or are in the process of developing clinical rotation opportunities at Veteran's Health Administration hospitals and Department of Defense facilities that employ chiropractors. Further efforts are being made to incorporate newly graduated chiropractors in loan-repayment programs that reward service in community health clinics. While these arrangements are currently few in number, the clinical experience to be gained from working in integrated health care settings has obvious implications for students as they subsequently move along in their careers, and underscores the need to develop didactic interdisciplinary objectives.

Traditional Chinese Medicine

Chinese medicine is an ancient healing tradition dating back almost 3,000 years. Its core components are acupuncture, Chinese herbal medicine, moxibustion, massage (or bodywork), and exercise and lifestyle/nutrition recommendations. Acupuncture is most widely known in the U.S., but the majority of licensed acupuncturists also use Chinese herbs and other approaches. The philosophy of Chinese medicine revolves around the modulation of the flow of Qi (life energy) through a system of channels in the body. Most states of illness or imbalance can be traced to disorders in the flow of Qi, and correcting these can help restore health and prevent illness. According to the 2002 National Health Interview Survey, as of 2002, approximately 8.2 million U.S. adults had used acupuncture, and an estimated 2.1 million U.S. adults had done so in the previous year (Barnes et al., 2004).

Forty-three states plus Washington D.C. regulate and license acupuncturists. The scope of practice varies by state. Most states require the passage of the National Certification Commission for Acupuncture and Oriental Medicine exam, although California has its own exam. The entry level degree for the field is a master's degree. Currently, there are three main degrees offered in the acupuncture/Oriental medicine educational institutions: the master's in acupuncture (3 years); the master's in acupuncture and Oriental medicine (4 years); and the Doctorate in Acupuncture and Oriental Medicine (DAOM) (an additional 2 years following the masters's degree). As a general rule, physician acupuncturists undergo significantly less training (300 hours on average) than those with master's or doctoral degrees in acupuncture and oriental medicine.

A qualifying exam that is used by most states as a component for licensure has been administered by the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) since 1985, and to date over 19,000 certificates have been granted in Acupuncture, Oriental Medicine, Chinese Herbology, and Asian Bodywork Therapy, the four categories in which the NCCAOM examines for qualification (NCCAOM, 2008). To be eligible for NCCAOM certification, one must graduate from a master's or doctoral level program accredited by the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM), the agency designated by the U.S. Department of Education to set standards in this area. Currently over 60 schools and colleges are either accredited or have candidacy status with the ACAOM (ACAOM 2008). To be accredited, an acupuncture program must be at least 3 years in length, and include core subjects such as history and theory of Oriental medicine, acupuncture point location, diagnostic skills, treatment techniques, and biomedical clinical sciences. The Acupuncture and Oriental Medicine master's degree must be at least 4 years in length and include Chinese herbology. The clinical Doctorate in Acupuncture and Oriental Medicine (DAOM) must be a total (including the master's degree) of 4,000 hours. There are currently 8 AOM colleges offering the DAOM clinical doctoral degree.

Because different dimensions of Chinese medicine are practiced by practitioners in these varying categories, establishing exact estimates of the number of Chinese medicine practitioners or acupuncturists in the U.S. workforce is extremely difficult. Estimates of

the number of licensed acupuncturists currently practicing in the U.S. range from 25,000 to 30,000; the number of physician acupuncturists is estimated at 3,000-6,000.

Although Chinese medicine has been practiced in Asian communities in the U.S. since the 1850's, its widespread availability in the U.S. has developed since 1970, when China opened to the West. Many different styles of Chinese medicine are currently practiced in the U.S. Perhaps most widespread is TCM, a modified system developed in the 1950s which combines a heavier reliance on herbal medicines in combination with acupuncture. Classical Chinese medicine, the dominant system until the emergence of TCM under Mao, relies more on the use of acupuncture channels. Various other approaches have developed elsewhere in Asia and Europe and are now practiced in the U.S. as well, including Japanese acupuncture, Korean hand acupuncture, five element theory, auricular acupuncture, and others.

A large body of clinical research now exists supporting the effectiveness of acupuncture for a wide variety of clinical conditions. The most extensively studied applications are in pain conditions: for example, a Cochrane review of 35 randomized controlled trials (RCT) covering 2,861 patients with chronic low-back pain concluded in 2005 that acupuncture is more effective for pain relief than no treatment or sham treatment, in measurements taken up to 3 months (Furlan et al., 2005). Recently, a large NIH funded clinical trial showed acupuncture to be effective in treating osteoarthritis of the knee (Berman et al., 2004). In clinical practice, acupuncture is also widely used for conditions for which clinical evidence is somewhat less definitive, including treatment of allergies, asthma, and infertility.

TCM institutions have been generally more internally focused on basic educational reforms and issues within the discipline than on integrative health care goals. The diversity of TCM institutions and inconsistent scope and licensing laws in the U.S. demand a great deal of attention from TCM leaders. Steady progress has been made however. Accreditation standards now mandate that doctoral level students work collaboratively with other types of health care providers in a variety of settings including hospitals. For example, many TCM programs have developed high-level training relationships with TCM hospitals in China. Typically, TCM students in the last stage of training may spend one month or more observing and treating patients in a multidisciplinary setting. There is growing interest in evidence-based concepts and some TCM institutions have been awarded a number of educational and research grants from NCCAM. In most cases, these efforts also required collaborations with established university scientists.

A new and exciting development is the emergence of post-graduate fellowship programs for licensed acupuncturists seeking to gain more experience in conventional health care settings. Beth Israel Medical Center in New York recently launched the first such program in the U.S., and 8 graduate-level acupuncturists are now working and training for one year in the hospital setting. As TCM moves towards a doctoral-level degree for licensing on a national level, it is likely that such interdisciplinary clinical training will become more commonplace.

Naturopathic Medicine

Naturopathic medicine is a comprehensive system of primary health care emphasizing prevention, treatment, and the promotion of optimal health through the use of therapeutic methods and modalities that encourage the self-healing process. It is a holistic approach to health care that seeks to respect the unique individuality of each person.

Founded in the U.S. in 1902, naturopathic medicine achieved its first regulation as a licensed practice within a decade. The profession declined in the mid-century, only to begin a period of renewal in the late 1970s when a new generation began to seek a science-based education which would prepare them to be licensed with a broad scope as general practitioners of natural medicine. The educational, research, professional and regulatory infrastructure for the present naturopathic profession was significantly reformed in this modern era.

A naturopathic physician (ND) must complete a bachelor's degree with premedical training before entering naturopathic medical school. Naturopathic medical education is a four-year graduate level training program. Education in the first two years includes a basic science curriculum very similar to MD education. Course work includes anatomy, biochemistry, microbiology, physiology, embryology, histology and genetics. Students complete additional courses in clinical diagnosis, pathology, lab diagnosis and diagnostic imaging as well as naturopathic philosophy and therapeutics, nutrition, mind-body medicine, homeopathy and botanical medicine. In the final two years, didactic education builds on naturopathic therapeutics and additional coursework is completed in pediatrics, gynecology, gastroenterology, orthopedics, cardiovascular health, disorders of the eyes, ears, nose and throat, nephrology and dermatology. The focus is on clinical sciences and supervised clinical instruction through teaching clinics and externships in community locations.

This educational program is based on standards of the Council on Naturopathic Medical Education (CNME), which gained recognition as an approved accrediting agency by the U.S. Department of Education in 1987. Within North America, there are 7 naturopathic medical schools that have programmatic accreditation or candidacy status with the CNME, 5 of these are in the U.S. Each U.S. institution is also accredited by, or is in candidate status for accreditation with, one of the regional accrediting agencies approved by the U.S. Department of Education.

The 7 CNME-recognized schools are also members of the Association of Accredited Naturopathic Medical Colleges (AANMC). In 2007, the AANMC published a report on educational competencies. The report delineated knowledge, skills and attitudes around 5 key roles for the naturopathic physician:

- The medical expert, who integrates naturopathic principles and philosophy to reach accurate diagnoses and formulate safe, effective treatment plans, manage patient care and interact with other healthcare professionals for patients' benefit.
- The naturopathic manager, who can create, develop and maintain a clinical practice. Courses in practice management, ethics and jurisprudence together with clinical training provide students with the necessary experience and knowledge to succeed in this endeavor.
- The naturopathic professional, who is well-grounded in the history of the profession, understands the importance of ethical practice, public health and participation in professional affairs on a state and national level.
- The naturopathic health scholar, who practices *docere*, the role of doctor as teacher with individual patients and in the wider community and who stays current through continuing medical education and reading and critically evaluating the peer-reviewed literature.
- The naturopathic health advocate, who practices prevention with patients, understands and promotes the relationship of environmental sustainability to human health, and participates in the broader health care dialog.

To attain licensure, naturopathic physicians are required to graduate from a CNME recognized program and then pass the Naturopathic Physicians Licensing Examination Board (NPLEX). The board examination is offered by the North American Board of Naturopathic Examiners (NABNE) and is utilized by all of the states licensing naturopathic doctors. To maintain licensure, NDs are required to fulfill state-mandated continuing education requirements annually, and to practice within the specific scope of practice defined by their state's law.

Naturopathic physicians are currently licensed in 15 states, as well as the District of Columbia, and the United States territories of Puerto Rico and the United States Virgin Islands. Expanding licensing is a priority of the profession. California was added in 2004 and Minnesota in 2008. The scope of practice of licensed naturopathic physicians varies from state to state. In all states with updated or laws, licensed members of the profession have prescriptive authority for conventional pharmaceuticals, although the breadth of the formulary varies. Variation between states also exists in such areas as rights to use injections, the question of whether “physician” is a legal term, the practice of natural childbirth and minor surgery, and inclusion of acupuncture. Licensing efforts are underway in New York, Massachusetts, Illinois, Florida and elsewhere.

The size of the naturopathic medical workforce has increased significantly in the modern era, and particularly the past decade. According to a 2001 report issued by the Center for Health Professions at UCSF (Hough et al., 2001), there were approximately 1,300 naturopathic physicians licensed in the U.S. The number of licensed NDs has more than tripled in the past 10 years and the American Association of Naturopathic Physicians (AANP) now estimates that there are 3,500 licensed NDs across the U.S. Roughly 400 new NDs graduate each year.

The AANP estimates that approximately 50 percent of NDs provide primary care in office-based, private practice as solo practitioners. NDs with less than 10 years of experience are more likely to practice in interdisciplinary group practices. (Howard, 2008).

Insurance coverage varies by plan, and by jurisdiction. Connecticut and Vermont have coverage mandates which in Vermont, beginning in 2007, also included Medicaid. The “every category of provider statute” in Washington state requires that all of that state’s plans, beginning in 1996, had to include naturopathic physicians. In some plans, members can choose naturopathic physicians as their primary care providers. Because naturopathic physicians in Washington do not have the right to admit patients to hospitals, the NDs in that state must have a collaborative relationship with an MD to manage admissions.

Clinical research into natural therapies has become an increasingly important focus for naturopathic physicians. Investigators at naturopathic medical schools have been the recipients of NIH grants and NIH NCCAM funded a project that led to the development of a research agenda (Standish et al, 2006) that identified 4 strategic priorities:

- High validity randomized controlled trials (RCTs) of whole practice naturopathic medicine;
- Basic science including mechanism of action;
- Health services research through regional demonstration projects; and
- Exploration of naturopathic medical principles through basic and applied research.

The level of integration of naturopathic physicians with the conventional healthcare system varies from state to state and is in part, a function of the legally defined scope of practice and inclusion by third party payers. In states where the relationship has had a chance to mature, naturopathic professional activities are known to include: creation of school-based health clinics; employment in community health clinics; recognition as a primary care provider (PCP) option in leading plans; participation in a state-funded student loan-payback program for providing primary care to underserved communities; collaboration on research, education and practice with conventional academic health centers; participation with multidisciplinary consortia of educators; employment as staff physicians or as specialists in cancer centers and other specialty clinics; service on boards of hospitals and public health agencies; and ongoing participation, through actions of the professional associations, in diverse state and local policy venues as part of the primary care matrix.

Massage Therapy

Massage therapy is an umbrella term covering a very wide range of manual procedures targeting the body’s soft tissues, primarily muscles, with the intent of improving health. There is a notable lack of consistency in the legal definition and scope of massage therapy, but most jurisdictions agree that massage therapy excludes diagnosis; drug prescription; manipulation or adjustments of the skeletal structure; or any other service,

procedure or therapy which requires a license to practice orthopedics, physical therapy, podiatry, chiropractic, osteopathy, psychotherapy, acupuncture, or any other profession or branch of medicine.

Massage can be delivered as a relaxation procedure to reduce stress and enhance well-being, or it can be used to address a variety of health complaints such as musculoskeletal pain, headache, and anxiety. At least 80 types of massage therapy exist including Swedish massage, trigger point massage, deep tissue massage, and sports massage. There are also many forms of massage from Asian cultures, notably Shiatsu, Thai massage and acupressure. Most therapists specialize in a few techniques.

Massage is a popular procedure delivered by practitioners in a variety of private and professional settings, including hospitals, medical spas and chiropractic offices. According to the American Massage Therapy Association (AMTA) website (2008), typical massage therapy sessions run 30-60 minutes. Estimates vary, but the *2007 AMTA Consumer Survey* results show that 24% of American adults had a massage at least once in the preceding 12 months. AMTA further estimates that there are 265,000 to 300,000 massage therapists and students in the U.S., and that employment for massage therapists will increase by 20 percent between 2006 and 2016. Most therapists are female (85 percent) and enter it as a second career (76 percent) in their early 40s, although increasingly, younger people are beginning to enter the field as a first career. Therapists practice an average of 19 hours per week and work in the field for about 7 years. Because of the chaotic regulatory environment, health services data on the relative rates of reimbursement are rough estimates at best. Most massage practice is cash-based, but is being increasingly reimbursed by many health plans and third party payors.

Massage is an empirical health care practice that dates back to before recorded history. The overarching philosophical approach, according to one well-regarded textbook, encompasses concepts of natural healing, a holistic view of human life, and an innate healing ability of the body (Benjamin, 2005). Massage therapists would describe themselves as highly service-oriented practitioners who believe in their ability to enhance their clients' well-being. Modern western-style massage practice is usually linked to the work of Per Henrik Ling (1776-1839) and Johann Georg Mezger (1838-1909), which came to be known as Swedish massage around the turn of the century.

It is only in the past few decades that massage therapy has begun to take on the characteristics of a health profession. State level licensing laws are being passed, such as in California where, until recently, massage was regulated (or not) by local jurisdictions only, creating an inconsistent and incoherent practice environment. Today, 39 states and the District of Columbia have passed laws regulating massage therapy. In the states that have regulations, therapists must meet legal requirements that usually include a minimum number of hours of initial training and passing an exam. The national average number of training hours of currently practicing therapists stands at 688 hours, but this is likely to increase as a result of the drive to standardize the education and practice. The National Certification Board for Therapeutic Massage and Bodywork (NCBTMB) has been able to certify 90,000 massage therapists since 1992 through an exam required in many states.

The Federation of State Massage Therapy Boards, established in 2005, is also involved in developing national licensure examinations.

As the least developed licensed CAM profession, the massage therapy educational community has made significant progress. It will need to continue to work in concert with its licensing and political organizations so that massage therapy training programs will have the time, funding and ability to concentrate specifically on integrative health care curricular goals. Currently, leaders of the profession are focused on developing national educational standards that will determine the appropriate level of skills and knowledge required to be a licensed and certified massage therapist. In 2002, the U.S. Department of Education recognized the Commission on Massage Therapy Accreditation (COMTA) (2008), which has become the primary accrediting body. At this time it has accredited approximately 100 of the estimated 1675 massage schools and programs in the U.S. and Canada.

In terms of clinical training, most therapists do not experience work in interdisciplinary settings, but this is likely to change. Massage therapy is almost universally involved in integrative health care clinics as part of the CAM package of therapies, and it is used in many hospitals. For example, Lucille Packard Children's Hospital at Stanford University offers massage therapy to patients as part of its pain management program. Other near-term goals will be to further apply accreditation standards to the many small proprietary training programs that exist, and stabilize the current chaotic set of state licensing regulations to a consistent norm.

In addition to the growing popularity and respect that massage therapy is experiencing, it is now on the agenda for the NIH, and a growing body of studies shows promising effects (Massage Therapy Research Consortium, 2008). The profession has established a research foundation (Massage Therapy Foundation, 2008), which has a database containing over 4,800 records including both indexed and non-indexed journal citations, and a newly formed peer-reviewed journal, the *International Journal of Therapeutic Massage and Bodywork: Research Education and Practice*. The Foundation was founded in 1990 with the mission of bringing the benefits of massage therapy to the broadest spectrum of society through the generation, dissemination, and application of knowledge in the field of massage therapy.

Summary: Reform/Innovation Initiatives within Health Professional Education

As is evident from the reviews above, each health care discipline faces unique challenges in making training in the integrative approach to health care a reality. Nursing, perhaps due to its underlying holistic philosophy, is in many ways the most advanced in this process. In biomedicine, we see modest progress at the post-graduate level and in undergraduate programs. Within the CAM professions, although we see substantial movement to place more emphasis on scientific methods, research, and EBP, it is not at all clear that enhancing the critical-thinking skills of CAM practitioners will cause them

to automatically embrace their medical colleagues within a new integrative health care paradigm. In fact, with regard to integrative health care *per se*, the CAM professions generally have not yet developed and implemented specific curricular objectives. Little curricular dialogue with respect to integrative health care has taken place among a wider group of educators in each CAM profession. Furthermore, the CAM professions' accreditation bodies have no history of formally working with each other.

The comparable breadth and depth of each profession's educational infrastructure is an important issue that will need to be addressed. A full discussion of the resource challenges facing CAM education is beyond the scope of this paper, but it is difficult to imagine that a wider gap could exist in the resources available to CAM education compared to medical and nursing education. Almost all CAM training institutions are stand-alone, not-for-profit entities that depend almost entirely on tuition revenue to cover expenses. CAM institutions are generally not in a position, as are many medical and nursing institutions, to take advantage of the expertise and financial support of publically-funded universities. While a few relatively recent significant counter examples can be cited, for all intents and purposes, funding from grants and contracts that drive many innovative educational and research enterprises in conventional health care institutions simply does not exist in CAM institutions. This paucity of financial support and all that it represents to the CAM professions is one of the core issues that challenges the advancement of an interdisciplinary integrative health care agenda.

There are however, two organizations that have made efforts to bring together educators to advance integrative health/medicine education. The Consortium of Academic Health Centers for Integrative Medicine (CAHCIM), a group of 42 medical schools, has among its goals to stimulate changes in medical education that facilitate the adoption of integrative medicine curricula. The Academic Consortium for Complementary and Alternative Health Care (ACCAHC) (2008) was formed in 2004 as a joint effort of the national educational institutions of the fully accredited complementary and alternative health care (CAM) disciplines. ACCAHC's mission is to advance the academic needs and development of the evolving CAM professions, as well as the traditional world medicine professions that are emerging in the United States; and to foster a coherent, synergistic collaboration with academic institutions of the conventional medical, nursing, and public and community health professions. ACCAHC includes the following licensed CAM professions: Acupuncture and Oriental Medicine (also called TCM), chiropractic medicine, direct entry midwifery, massage therapy and Naturopathic medicine.

In summary, educational reforms in the major health professions, specifically with respect to integrative health care goals, vary considerably depending on the overall current state of development of each profession. Common to all the CAM professions, however, is that they all suffer from lack of access to adequate financial and human resources that could be used to meet the educational goals of a well-integrated health care system. Nevertheless, progress is certainly possible and indeed, is beginning to be visible. Overtures by medical institutions seeking to initiate educational efforts to promote integrative health care will generally be seen as consistent and desirable with CAM educational goals as well, especially in interdisciplinary care.

ATTITUDES OF HEALTH PROFESSIONALS

As consumer use of CAM has increased and evidence has accumulated demonstrating safety and efficacy of CAM approaches, attitudes of conventional health care providers towards CAM have become more favorable. Very few studies have focused on attitudes of CAM providers and no studies were found that focused specifically on attitudes of any professional group towards integrative health care, as distinct from CAM.

The largest numbers of studies have examined physician attitudes and practice patterns related to CAM. In a regional survey conducted by Berman et al. (1995), over 90 percent of respondents expressed the view that CAM approaches, such as diet and exercise, biofeedback and behavioral medicine, are legitimate medical practices. Over 70 percent of respondents indicated that they were interested in more training in areas including hypnotherapy, massage therapy, acupuncture, herbal medicine, and prayer. In a subsequent national survey, Berman et al. (1998) reported that physicians in practice more than 22 years had the least positive attitudes towards CAM and that attitudes and training were the best predictors of use in professional practice. In a survey of primary care and medical subspecialties practitioners, Crock et al. (1999) found that overall, physicians demonstrated an open attitude toward CAM, but had low rates of referral for CAM therapies. In a study of physicians in an academic health center, Wahner-Roedler et al. (2006) reported that the majority of physicians agreed that some CAM therapies hold promise for the treatment of symptoms or diseases but most of them were not comfortable in counseling their patients about CAM treatments. In a study of osteopathic physicians, Kurtz et al. (2003) reported that family physicians and internists were more likely than pediatricians to talk to their patients about CAM or refer their patients for CAM. Physicians 35 years of age and younger were more likely than those over 60 to use CAM for themselves or their families.

In a study of critical care nurses, Tracy et al. (2003) found that despite barriers including lack of knowledge, time and training, 88 percent of respondents were open or eager to use complementary therapies in their practice. In a study of faculty and students in an academic health center, Kreitzer et al. (2002) found that 90 percent of medical and nursing school faculty and students believed that clinical care should integrate conventional care and CAM therapies and that health professionals should be able to advise their patients about commonly used CAM methods. In a recently published literature review that summarized 21 surveys of physicians, nurses, public health professionals, dietitians, social workers, medical/nursing faculty and pharmacists, Sewitch et al. (2008) concluded that overall, physicians demonstrated more negative attitudes towards CAM compared to other health care professionals. Positive attitudes toward CAM did not correlate with CAM referral or prescription patterns, and health care professionals of all disciplines wanted more information about CAM.

Very few studies have focused on the attitudes of CAM practitioners towards working with biomedical practitioners. In a qualitative study of CAM practitioners, Barrett et al.

(2004) reported that CAM providers stressed the holistic, empowering, and person-centered nature of CAM and that they describe themselves as healers. While calling for the greater integration of conventional and complementary health care, these authors identified that attitudes and beliefs were often larger impediments to integration than were economic or scientific considerations. A study of students' perceptions of interprofessional relationships in 8 health professional programs including chiropractic using the Interdisciplinary Education Perception Scale revealed substantial differences among the students in perceptions of competence/autonomy, perceived need for cooperation, perception of actual cooperation, and understanding others' value (Hawk et al., 2002). Data from one study revealed that chiropractors do not identify their profession as falling within the domain of CAM. Redwood et al. (2008) surveyed chiropractic faculty and practitioners and reported that 69 percent do not believe that chiropractic should be categorized as CAM. Twenty-seven percent (27 percent) thought that chiropractic should be classified as integrative medicine.

Kaptchuk et al. (2005) have advocated the concept of “pluralism” as opposed to “integration” as a philosophy or attitude to ground the ongoing discussion between biomedical and CAM practitioners:

“Integration... ignores unbridgeable epistemological beliefs and practices between mainstream and alternative medicine. Pluralism, which has been relatively ignored, calls for cooperation between the different medical systems rather than their integration. By recognizing the value of freedom of choice in medical options, pluralism is compatible with the principle of patient autonomy... Pluralism encourages cooperation, research, and open communication and respect between practitioners despite the possible existence of honest disagreement, and preserves the integrity of each of the treatment systems involved.”

Pluralism may ultimately prove the most reasonable approach to bridge the gaps in paradigm and tradition between the health care professions while at the same time promoting discussion and dialogue.

EDUCATIONAL STRATEGIES FOR EFFECTING CHANGE

Identification of Core Competencies

The IOM report, *Health Professions Education: A Bridge to Quality* (IOM, 2003) has already been mentioned as a highly influential document urging substantial changes that are highly consistent with the goals and hopes of integrative health care. The IOM committee spent considerable effort to make recommendations to introduce core competencies for an outcome-based education system that better prepares practitioners to meet the needs of patients and the requirements of a changing health care system. The competencies are: 1) provide patient-centered care; 2) work on interdisciplinary teams; 3)

employ evidence-based practice; 4) apply quality improvement; and 5) utilize informatics. The report emphasizes that the core competencies are meant to be shared across the health professions and that careful consideration should be paid to the cultural changes necessary to support their inclusion. Notably, however, the document is silent on the issue of integrative health care.

Kligler et al (2004), representing the Educational Working group of the CAHCIM, identified 30 competencies in integrative medicine in the 4 domains of values, knowledge, attitudes, and skills. The authors also discussed challenges to educators and provided some specific successful examples of implementation and evaluation. The overarching goal was to develop “a coherent, generally agreed-upon framework that articulates the core knowledge to be mastered by medical students.” The competencies in the report were derived after a 2-year process of dialogue on the content, process and scope of integrative medicine education.

The authors expanded the standard knowledge/attitudes/skills format in order to emphasize that humanistic values and philosophical perspectives should be the foundation for an integrative approach to health care. They emphasized the value of experiential learning, self-care and reflection, and the need for faculty development in this area. They also acknowledged the presence of substantial challenges concerning how competencies could be implemented and properly evaluated in individual institutional settings.

The impact and implications of the CAHCIM document (Kligler et al., 2004) were almost immediately recognized by educational leaders of CAM institutions represented by the ACCHAC. It stimulated a vigorous discussion that ultimately led to a formal response published in the *Journal of Alternative and Complementary Medicine* in 2007 (Benjamin et al., 2007). The ACCHAC took issue with a number of points in the CAHCIM paper, these concerns were clarified through a Delphi process with ACCHAC members. Five key areas of concern emerged: 1) the definition of integrative medicine as presented, 2) lack of clarity regarding the goals of the proposed integrative medicine curriculum, 3) lack of recognition of the breadth of whole systems of health care, 4) omission of competencies related to collaboration between medical and CAM professionals in patient care, and 5) omission of potential areas of partnership in integrative health care education. At root were familiar concerns of the CAM professions that they were being relatively ignored while their approaches, methods, and values were being adopted by medical educators. A clear desire was expressed by the CAM professions to be better recognized and included as equal partners in the evolution of integrative health care education. The ensuing dialog between CAHCIM and ACCHAC was fruitful; in 2005, CAHCIM revised its definition of integrative medicine to more clearly indicate that collaboration with “...all appropriate therapeutic approaches, *healthcare professionals and disciplines* to achieve optimal health and healing,” should be a hallmark of integrative health care (Benjamin et al., 2007).

A related effort was spearheaded about the same time by the National Education Dialog to Advance Integrated Health Care (NED) (Weeks et al., 2005), a multidisciplinary

collaboration of CAM and conventional medical educators and policy-makers that culminated in a meeting at Georgetown University in 2005. The vision of the NED was stated to be a "...healthcare system that is multidisciplinary and enhances competence, mutual respect, and collaboration across all CAM and conventional healthcare disciplines." Among 9 recommendations for action, at least 5 involved education including one on inter-institutional relationships and one on developing competencies on shared values, skills and attitudes. Both of these had implications for refining workable integrative health care competencies, but the process fell short of operationally defining the competencies in any detailed fashion. Nevertheless, this cross-disciplinary meeting identified many of the challenges and opportunities for shared educational efforts.

Subsequent dialogue by a subset of NED participants identified, as have others, that with respect to the goal of interdisciplinary collaboration, the set of knowledge, skills, and values identified for *Practitioner to Practitioner Relationships in Relation-Centered Care* developed by the Pew-Fetzer Task Force on Advancing Psychosocial Health Education could provide an excellent foundation (Tresolini, 1994). While the Pew-Fetzer Task Force was not focused on integrative health care *per se*, it listed 24 learning goals organized into 4 topic areas: self-awareness, traditions of knowledge in health professions, building teams and communities, and working dynamics of teams and communities. While also leaving something to be desired in the way of specific measurable competencies, there is a notable consistency of the Pew themes with efforts to define competencies for integrative medicine.

A different and instructive effort from the field of allied health attempted to "harmonize" core competencies to develop a framework for interprofessional education for medicine, nursing, occupational therapy, and physical therapy in Canada (Verma et al., 2006). While also not focused on integrative health care, this effort identified challenges to collaboration across disciplines within the umbrella of conventional medicine which apply even more clearly to the gulf that has separated the conventional and CAM professions. By reviewing key competency documents from the 4 professions, they were able to demonstrate substantial convergence in 6 domains or roles, that of: a professional (including as a health advocate), an expert, a scholar, a manager, a communicator, and a collaborator. The authors felt that the perceived competency silos of each profession were, in fact, more perceptions than real, and that with some effort, shared competencies can be identified and implemented. The emerging importance of team-based skills and interdisciplinary education to integrative health care, and the attendant challenges are discussed in further detail below.

Recently, Kreitzer (Kreitzer et al., 2008) surveyed the principal investigators of the aforementioned NCCAM awarded R-25 grants to 15 medical and nursing programs in order to obtain recommendations on the core competencies in CAM that had evolved during the course of their projects for conventionally trained students, physicians and nurses. Responses varied substantially depending on the original aims and the context in which the grantees were able to execute ideas. Nevertheless, 5 thematic domains emerged. These were described as: 1) awareness of CAM therapies and practices, 2) the evidence base underlying CAM therapies, 3) CAM skill development (primarily focused

on cultural competence skills to enhance patient communication about CAM use, but relatively little on specific CAM treatment skills), 4) self-awareness and self-care (particularly mind-body approaches to alleviating stress), and 5) CAM models and systems. While perhaps partially explained by the overlap between the institutions receiving R-25 grants and the institutional members of CAHCIM, it was noted that the “grassroots” results obtained by 15 programs over time demonstrated considerable consistency with those developed by the more focused CAHCIM consensus process. The details and differences reflected in the NCCAM grant driven domains probably reflect practical experience and more realistic expectations, but the degree of consistency with the loftier goals set by the CAHCIM document is encouraging because it demonstrates that curricular changes are possible.

At this juncture, the dialogue continues, but now with a growing base of experience and an acknowledged set of key publications from authoritative sources in both the conventional and CAM worlds. There is some controversy as to what, if any, level of skill should be expected of physicians in recommending specific integrative approaches to patients—and as such if the suggested CAHCIM competencies demand more than may be practical as expected competencies for all physicians. There is however, general agreement that the recent IOM recommendation that physicians be “competent to advise” patients about CAM represents a basic competency that can be expected of all medical school graduates. The challenge has been to clarify and describe what comprises this competency—i.e., what level of knowledge and/or experience of CAM should be required—and how to measure it. The most common approach has been to teach and then test for this as a “communication” competency i.e., expecting that all physicians will incorporate inquiry on patients’ use of CAM into their history taking in a nonjudgmental manner. This competency shares much with competencies now expected in patient-centered communication and multicultural sensitivity. Several schools are now using either observed standardized clinical encounters or standardized patient scenarios to evaluate students and residents for their competency in this particular skill (Kligler et al., 2007).

There is a similar and equally important controversy surrounding what level of competency in primary care (i.e., diagnosing and either treating or properly referring common presenting problems) should be expected of CAM professionals. Some of the professions - naturopathy, chiropractic and traditional Chinese medicine most notably—already define such competencies for their profession, but others do not. If the health care system of the future is going to more closely interweave the health professions, the role and responsibility of the “first contact” with a patient needs to be defined much more explicitly and in a fashion which will lead to more trust, collaboration, and referral across and between specialties. This inter-profession discussion of what comprises “competency” in primary care will be difficult because it will also involve many questions of “turf,” reimbursement, and power, but we cannot hope to move to the next level of integrative care without finding a way to promote such a dialogue as part of the discussion of shared competencies.

Once we reach a wider consensus about the shared competencies that will support the infrastructure for truly integrated and integrative health care, we will face the challenge of measuring whether these competencies are being taught effectively. This is a challenge facing all the health professions individually as well as we move from evaluating only the cognitive skill domain to trying to define measurable behaviors that will actually impact patient care. Here again, nursing has much to teach the other professions, having focused for a number of years already on defining and evaluating behavioral competencies.

Interdisciplinary Education

The IOM report on Health Professions Education provides the best template currently available for how to move forward training in integrative health care in its emphasis on multidisciplinary/team-based education. The report describes a wonderful vignette of an interdisciplinary learning team-- comprised of medical, pharmacy and nursing students—collaborating on the care of a complex inpatient (IOM, 2003). Each profession addresses the area of care most relevant to its role, and information is shared continuously and freely. An environment of respect pervades the team communications, which ultimately spills over to the approach to the care of the patient. The model falls short only in its failure to include students of the other healing arts—acupuncture, chiropractic, massage therapy, for example—in its vision.

Although there are some examples of interdisciplinary strategies to integrative health care education, to date many medical schools have focused on either MD faculty teaching about CAM, or faculty from local CAM schools doing this teaching as guest faculty. There is some evidence that this approach—simply incorporating the “CAM” content into the conventional curriculum, or engineering occasional appearances as teachers by CAM practitioners—may not be enough to engender widespread culture change and true integration of the different healing paradigms. A report from one of the NCCAM-funded R-25 institutions at Oregon Health Sciences University (OHSU) found that having CAM practitioners teaching about CAM has not had a significant impact on OHSU’s culture. These authors reported that “attitudes held by faculty at OHSU are largely unchanged by these research, educational, and clinical initiatives, as serial qualitative interviews have demonstrated (Nedrow et al., 2007).”

Two examples of pilot programs bringing students from conventional medicine and CAM disciplines together early in training are based on the idea that sharing common experiences early in training will break down barriers to effective collaboration and communication in a way no amount of teaching “about” CAM or even contact with CAM school faculty can do. First year medical students at the University of Minnesota have an immersion experience in TCM at Northwestern Health Sciences University as part of a first year required course. In addition to interacting with TCM students and faculty and learning about its theoretical basis, students observe and experience various aspects of TCM (NED 2005). Another such collaborative program occurs between Georgetown School of Medicine and the Potomac Manual Therapies Institute: PMTI students visit the Georgetown anatomy lab where medical students lead a 90 minute cadaver tour. Medical

students then visit PMTI and massage therapy students offer the Georgetown students an experience of massage, with appropriate education on application and techniques. Between 2003 and 2006, 120 PMTI students (50 percent of the student body) and 80 Georgetown students (25 percent) had participated in the program (Kreitzer and Sierpina, 2006). According to the program faculty, this effort demonstrates that “personal encounters, working side by side and learning about each other’s discipline, result in mutual respect, which may ultimately contribute to the creation of an integrated health care system.”

Although a body of research literature is emerging studying the outcomes of interprofessional educational (IPE) efforts, some degree of controversy remains as to whether this approach can actually be said to change the behaviors of the professionals involved. Hammick et al., (2007) reviewed 21 studies of IPE programs and concluded that these interventions are generally well-received and facilitate the development of skills in working collaboratively across disciplines, but that it is more difficult to demonstrate a clear impact on the behavior of the service delivery team. In a Cochrane review, Reeves et al., (2008) evaluated 6 studies of IPE interventions which met their inclusion criteria, and found that although most studies reported positive outcomes, it was not possible to draw real conclusions about the key elements of each intervention or their overall effectiveness. These authors and others call for more rigorous study of IPE interventions, incorporating an evaluation process to document the impact on the processes of care delivery and on patient-centered outcomes. Whatever efforts move forward to promote interdisciplinary training in integrative health care should include a research component examining the impact of these initiatives.

Interdisciplinary Graduate Programs in CAM or Integrative Health Care

Several types of interdisciplinary graduate programs have emerged that focus on CAM or integrative health care. Some are offered through interdisciplinary centers or programs within universities and others are offered through collegiate programs, such as schools of medicine.

- In 1999, the University of Minnesota approved an interdisciplinary graduate minor in complementary therapies and healing practices and subsequently began offering a graduate certificate program in CAM with an optional track in health coaching. The minor enables students pursuing masters or PhD degrees to enhance their degree program by focusing on CAM. The program attracts clinicians and researchers who aspire to practice or conduct research in integrative health.
- Georgetown University introduced a CAM-oriented, science-based master of science in physiology in 2003. The program is designed for students interested in careers in research, industry, regulatory affairs, CAM practice, or the practice of medicine. In 2005, Georgetown School of Medicine launched a 5 year MD/MS

track that enables students to complete the 4 year medical school curriculum and the CAM MS degree.

- In 2003, Tufts University School of Medicine and the New England School of Acupuncture (NESA) launched a unique collaborative program. While completing a master's degree at NESA, students can simultaneously enroll in a multidisciplinary pain management program at Tufts, thereby also earning a master's degree from Tufts.
- The University of Medicine and Dentistry of New Jersey School of Health Related Professions recently launched an online 30-credit MS degree in health sciences with a new track in integrative health and wellness. The track focuses on preparing licensed and certified health professionals to expand their competencies in CAM practices.

Each of these programs represent a unique path that offers students options to expand their expertise in CAM or integrative health care beyond information that may be obtained within their basic health professional education program.

Interdisciplinary Undergraduate Programs in Wellness or Integrative Health

Several types of interdisciplinary undergraduate programs have emerged that focus on wellness, CAM or integrative health. As noted by Burke et al., (2004), these programs are helping to build an education infrastructure at the baccalaureate level and may consist of a minor, major or certificate program. For example, San Francisco State University (SFSU) has been offering a series of holistic health courses since 1976. The Institute for Holistic Studies at SFSU, under the department of health education, offers a minor in holistic studies. Students enrolled in the minor take a set of courses that introduce the students to holistic health concepts. These courses are followed by advanced CAM courses in areas such as biofeedback and Chinese herbs. Similar minors are offered at Metropolitan State College of Denver and Georgian Court College in New Jersey. Northern New Mexico College offers a bachelor of science degree in Integrative Health Sciences (IHS). The IHS program accepts both new students and students with health backgrounds who want to gain knowledge and skill in integrative health. A wide range of courses is offered including aromatherapy, nutrition, energy healing and acupressure. These programs are attracting students who are planning to become health professionals and who wish to supplement their training with courses that focus on holistic health early on as well as students who enroll for personal development.

Innovative teaching methodologies/transformational learning

Along with a need for frequent and extensive contact with other health care disciplines throughout professional training, there is growing consensus among many health care educators that teaching about CAM—whether done by MDs or by CAM faculty—although necessary as part of the integration process, is not sufficient. Because a true integration of CAM into the health care system will require medical students and

physicians to expand their perspective on what constitutes “healing,” reflection-based curriculum must be part of this process. Just as health care practitioners cannot learn to practice patient-centered medicine or culturally competent health care without some capacity for reflection on the impact of their own behavior and attitudes on the patient’s experience, without an experiential/reflective component the integrative approach cannot be taught effectively: “For example, a lecture on acupuncture is unlikely to capture the sensate experience of having an acupuncture needle placed or the deep relaxation which 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 (Kligler et al., 2004).”

Separate and apart from the world of CAM and integrative health care, medicine as a discipline is wrestling with how to incorporate reflection, mindfulness, and self-awareness into medical training (Dobie, 2007). This effort is taking shape in the wide array of curricula in professionalism which have been developed at schools around the country in response to an LCME mandate for teaching in this area. Much of the genesis of this movement relates to the IOM statement in 2001 identifying the “continuous healing relationship” as the foundation for improving all patient care (IOM, 2001). The consensus emerging regarding the importance of experiential/reflective teaching strategies in this area is demonstrated by the fact that 14 of the 15 NCCAM R-25 grantees rated self-awareness and reflection activities as highly or very highly-valued components of their curriculum development plan (Elder et al., 2007).

The best example of a widely accepted reflection-based in medical education is the Healer’s Art Program. This teaching program was developed at the University of California, San Francisco, and is now offered in over 50 medical schools as an elective. This 4-6 session program, taught in small groups, utilizes a variety of reflective exercises designed to help students develop and maintain an understanding of the “human dimension of health care” and on understanding and maintaining a clear commitment to the meaning of their work (Remen and Rabow, 2005). In one session typical of this course, students work to write their own Hippocratic oath to describe how they hope to realize the values and attitudes which brought them into medicine as a profession.

IMPACT OF A NEW HEALTH CARE MODEL ON HEALTH PROFESSIONS EDUCATION

Changes in the health care system, such as a new care model, could both accelerate and reinforce changes being made in health professions education to advance integrative health. Currently, there are very few examples of integrative health or integrative medicine being practiced in a comprehensive and systematic manner in primary care, acute care, long term care, or public health settings. This makes it challenging to educate

students and it creates dissonance in graduates who, if they are educated in integrative health, may become quickly discouraged and disillusioned if they are unable to practice what they have learned. For integrative health care to advance the health of the public, there needs to be alignment in education, workforce development and deployment and practice settings. Primary care will be used to illustrate this point.

The American College of Physicians recently warned that “primary care, the backbone of the nation’s health care system, is at grave risk of collapse” (ACP, 2006) There is a confluence of factors contributing to challenges currently facing the U.S. health care system. An estimated 47 million people do not have insurance, thus limiting their access to care. With the aging of the population, there is a dramatic increase in chronic illness. Factors contributing to chronic illness include many lifestyle patterns including poor diet, lack of exercise, smoking and chronic stress. As noted by Bodenheimer and Laing (2007), the 15 minute office visit does not allow the provider to provide acute, chronic and preventive care, build relationships with patients and manage multiple, complex diagnoses. The system as structured is expensive and achieves less than desirable outcomes. Solutions often proposed include generating more primary care physicians and reforming the payment system that may undervalue office visits and overvalue technological and procedural services. At best, these strategies would enable us to produce more of the less than satisfactory outcomes that are presently being generated.

Fundamental reform of the system requires that we address the following questions:

- What are the health care needs of the public?
- Who are the health care providers best prepared to meet those needs?
- How can the strengths and assets of the workforce be leveraged to improve patient outcomes and reduce costs?
- What models of care will enable us to move from the current health care system that is sporadic, reactive, disease oriented and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment and a focus on the full range of physical, mental and social support needed to improve health and minimize the burden of disease?

To achieve better outcomes and to reduce costs, it is proposed here that the health care system focus on integrative health care throughout the continuum of care and to more strategically use the full complement of health professionals within the workforce. Primary care includes health promotion, disease prevention and the management of acute and chronic illness. A first line of care could include nurse practitioners and nurse midwives who can manage an estimated 80 percent of primary care. Primary care physicians could complement and support this care with specific emphasis on management of patients with more complex chronic illness. Ideally, within the primary care system, patients could also access chiropractors, TCM providers, naturopathic physicians, massage therapists, and other CAM professionals skilled in health promotion and disease prevention as well management of chronic disease. This team or cadre of health professionals along with health coaches, are optimally positioned and prepared to help people examine lifestyle patterns and choices. Typically, medical doctors, who the

system currently relies heavily on for primary care, receive minimal training in nutrition and health promotion.

The U.S. health care system is unparalleled in the use of technology, the management of trauma and the diagnosis and treatment of patients with complex acute and chronic illnesses. Advances in areas such as surgery, oncology, transplantation, infectious disease, neonatal care, intensive care, and high risk pregnancy are both life saving and life enhancing. It is well documented that MD specialists who perform high volumes of diagnostic and surgical procedures attain better outcomes than colleagues who perform procedures with less frequency. This both justifies and reinforces the need for specialty training of physicians from a workforce perspective.

In an effort to improve primary care, several innovative models have recently been proposed that could be significantly enhanced by including a focus on integrative health care.

Primary Care Innovation

Over the past 5 years, as the need to change the primary care system has become more apparent and urgent, ideas for innovation have emerged. Two models will be highlighted: the medical or health care home concept and the teamlet model of primary care. These models will be examined from the perspective of both the health care needs of the population and the workforce strengths and capacities.

Medical home concept: The American Academy of Pediatrics (AAP) first introduced this concept in a 1992 policy statement (AAP, 1992) advocating that a pediatrician or other primary care physician should be identified as a regular source of primary care for the patient. In a 2002 policy statement, the AAP (2002) expanded the definition of medical home to include the following operational characteristics: accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective care.

More recently, the American College of Physicians (ACP), American Academy of Pediatrics, the American Osteopathic Association and the American Academy of Family Physicians (AAFP) have endorsed this concept and have issued a statement on joint principles of the patient-centered medical home (AAMC, 2008). The concept of the medical home as defined in this document is that every person should have access to a primary care base where they have access to a person who serves as a trusted advisor and provider. This provider is supported by a coordinated team, with whom the patient has a continuous relationship. The medical home promotes prevention; provides care for most problems and serves as the point of first-contact for that care; coordinates care with other providers and community resources when necessary; integrates care across the health system; and provides care and health education in a culturally competent manner. It is proposed that payment for the medical home model should appropriately recognize and reward health care providers for their contributions to prevention, patient care, and care

coordination. This model is often referred to as a patient-centered and physician-guided model of care.

The focus on accessibility, health promotion, disease prevention, chronic disease management, and coordination of care attains much of what is described above as being desirable in a reformed health care system. The model falls short in two respects: it neglects to reflect the inclusion of integrative approaches to healing including the use of licensed CAM providers and it presumes that the MD is the only capable and prepared provider around which to organize the medical home concept. A modified approach might describe this as a “health home” – rather than a “medical home”- that leverages the capacities of nurse practitioners, chiropractors, and naturopathic physicians, among others, to provide primary care as well as first point of entry care. The underlying operating assumption would be to use less invasive and expensive methods first, including the use of CAM. Some consumers, for example, may opt to access a traditional Chinese medicine provider as the first point of entry. MD specialists would be used to access the unique and indispensable care that only they can provide. Health coaches could also be effectively used in this model.

Teamlet model of primary care: Bodenheimer et al. (2007) have described an innovation called the teamlet model. The presumption is that all primary care practices have a team. The team varies significantly with the size and type of the practice but has as a constant feature the clinician-health coach dyad. Goals of the teamlet model include improving the patient experience and enhancing patients’ self-management skills, improving preventive and chronic care, improving the work life of primary care clinicians, ensuring that all practice personnel are working to their fullest potential, and cutting health care costs by reducing unnecessary hospitalizations and emergency visits through intensive management of high-risk and high-utilizing patients by using health coaches. While some practices operate with the ratio of 1 clinician to 2 health coaches, others have successfully used a ratio of 5 coaches per 2 clinicians. Under this model, patients generally spend more time with the health coach than the primary care clinician. Bodenheimer et al. are not prescriptive as to the background and training of the primary care clinician. Presumably, it could be any of the health professions described in this paper who are trained to provide primary care. While this model does not describe integrative health care *per se* or the use of CAM, it seems reasonable that the model could be modified to include this expanded perspective.

Regarding the exploration of the role of new models of integrative care in our future health care system, a small but potentially important step was taken recently in the convening of a “scoping” meeting jointly organized by HRSA, the Samueli Institute, and the Institute for Alternative Futures to explore the role of integrative health care in reducing health disparities for underserved populations (Fritts et al., 2009). A planning process is now underway to study and disseminate information more widely on the potential role of increasing access to an integrative approach as one solution to some of our current problems with access to high quality care for chronic illness in the U.S..

SUMMARY

Over the past decade, many authoritative sources, including the IOM and the Association of Academic Health Centers, have repeatedly identified deficiencies in the training of the U.S. health care workforce that if addressed could lead to a better health care system. At the same time, other authoritative sources have chronicled the growing interest in what is becoming known as integrative health care. By virtue of its overarching humanistic philosophy and broad biopsychosocial perspective aligned with evidence-informed clinical decision-making, integrative health care could have the power to transform the training of all health care professionals to be able to deliver a safer, more effective and more coordinated form of care to the public. Admittedly, this is a bold statement that will require bold steps to bring into reality.

This paper has attempted to set the stage for future action by reviewing recommendations for curricular reform that have emerged from the IOM Committee on Health Professions Education, the IOM Committee on Use of Complementary and Alternative Medicine, the White House Commission on Complementary and Alternative Medicine and the National Education Dialogue. Each of these efforts has involved dedicated educational experts committed to high ideals. We subsequently summarized the initial seed efforts by NIH NCCAM to stimulate curricular reform in both conventional and CAM institutions. Many lessons can be derived from these collective efforts to change institutional and professional cultures that have proven resistant to change on many levels in both the CAM and conventional worlds. A more concerted and coordinated set of initiatives will need to be developed to move the training of all health care professionals to a new level.

Our review of 2 conventional (medicine and nursing) and 4 licensed CAM professions (chiropractic, naturopathy, TCM and massage therapy) highlight the opportunities that exist for a more coordinated health care workforce, but also the challenges that exist to bringing disparate professions together. We summarized the educational preparation and workforce structure of CAM and biomedical professions and their efforts to make curricular changes that advance integrative health care. It is abundantly clear that the glaring differences in resources, needs, and motivations of conventional health care training institutions compared to CAM institutions will require sensitivity, significant resources and extraordinary collaborative leadership.

While significant challenges exist, we also determined that the attitudes of health professionals toward integrative health care and CAM are undergoing significant shifts. Medical and CAM leaders have officially organized themselves to begin a dialogue to identify innovative strategies that could impact each health profession's education. These have resulted in the development of specific integrative health care competencies and interdisciplinary education initiatives at the undergraduate and graduate level that show great promise. In concordance with efforts under the umbrella of integrative health care, medical leaders have separately identified a number of primary care models that have the potential not only of transforming the way most health care is delivered, but also how interdisciplinary care is taught and modeled in all health care professions' training. These

models have great potential for bringing together the new thinking on both primary care and integrative health care.

Finally, in the next section we offer recommendations that will advance integrative health care and enable the movement from the current U.S. health care system that is sporadic, reactive, disease-oriented, and physician-centric to one that fosters an emphasis on health, wellness, early intervention for disease, patient empowerment, and a focus on the full range of physical, mental, and social support needed to improve health and minimize the burden of disease.

RECOMMENDATIONS

The following recommendations address how the health of the public may be served by incorporating an integrative health perspective into health professions education and workforce planning, deployment and utilization.

1. Convene a high level, interdisciplinary group, supported by HRSA, to be charged with developing core competencies in integrative care for all health professions students. This group should include representatives of the major accrediting bodies for the licensed health professions as well as leading educators from each profession. This will be a complex, multi-year process and will require significant administrative and funding support.
2. Bold innovation and reform is need in health professions education that will expand the focus of education from the treatment and management of disease to one that includes a focus and emphasis on wellness. Regulatory bodies governing education in the various health disciplines should be charged to mandate the inclusion of integrative health in basic, advanced and post-graduate training. At a minimum, this should include content on:
 - patient-centered and whole person care
 - personal responsibility for health and wellness
 - lifestyle choices, behaviors and outcomes including but not limited to diet, exercise, and stress reduction
 - health promotion and disease prevention
 - knowledge, principles, practices and processes that facilitate the integration of conventional biomedical care with CAM
3. Academic programs preparing health professions should be urged by the IOM and their regulatory bodies to create within their institutions a culture of wellness that includes a focus on self-care and reflection of one's own health and wellness behaviors.
4. At the federal and state level, legislation and regulation should be implemented that

will create incentives and reimbursement structures for conventional and licensed CAM health professions that accelerate reform and innovation in the health care system and that will achieve the following outcomes:

- Emphasis on health and wellness,
- Early detection and intervention for disease,
- Personal responsibility and patient empowerment,
- Access to integrative health options throughout the continuum of care, and
- Team-based care that maximizes utilization of conventional and CAM practitioners.

From an education perspective, it is critical to have clinical sites that enable students to obtain experience in integrative health and medicine and that reinforces learning acquired in the classroom.

5. Changes in legislation and regulation should be enacted at the state level that will enable health professionals including CAM providers and advance practice nurses to practice to the top of their license. Barriers should be removed that prevent health professionals from providing care and treatment that they are trained to safely provide.

It is anticipated that these changes will impact recruitment into health professions education and training programs.

6. The Department of Health and Human Services and other federal and state agencies responsible for workforce planning should be required to develop a national strategic vision for workforce planning that is based on new models of care and that encompasses conventional and licensed CAM providers.

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