Complementary and Alternative Medicine: Challenges and Opportunities for American Medicine

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Both as an art and as a science, medicine is ever-evolving. Before the emergence of the empirical and experimental sciences, physicians relied heavily on the art of medicine. But in the past century, progressively detailed investigations of individual organs, cells, and molecules led to the emergence of biomedicine, with its heavy reliance on science, as the now-dominant and conventional basis for medicine.

In the past century, advances in the biomedical sciences, coupled with improvements in sanitation and public health, resulted in dramatic improvements in health and a near-doubling of life expectancy. With these stunning successes, however, have come new challenges for conventional medicine, which has now to manage chronic diseases prevalent in an aging population. In this context, physicians are sometimes unable to cure their patients or offer them adequate relief from their symptoms, despite the current abundance of new treatments and technologies. Moreover, the reliance on technology and the economic imperatives of managed care have affected the privileged physician–patient relationship, depriving it of the rich dialogue that characterizes the art of medicine and can extend the healing process beyond that afforded by drugs and other treatments alone.

The Appeal of Non-Conventional Therapies

Facilitated by the globalization of information and resources, increasing numbers of patients are using complementary and alternative medicines (CAM) to satisfy their personal health needs. (CAM is defined as health care practices that are not an integral part of conventional medicine.) Eisenberg et al. estimated that by 1997, over 42% of Americans were using CAM.[1] As abundant and diverse as the peoples of the world, CAM practices encompass healing arts such as the use of herbals and other biologicals, acupuncture, chiropractic manipulation, fields of mind–body medicine, and many more.

Historical precedent predicts that a number of contemporary CAM therapies offer the potential to prevent and treat chronic diseases, reduce health care costs, and expand our understanding of how healing works. In fact, some of our most important pharmacologic agents, such as digitalis, vincristine, vinblastine, and reserpine, are derivatives of herbal products. Radiation therapy, once regarded as a radical approach to treating cancer, is now a standard of care, and acupuncture, considered arcane and primitive before Nixon went to China in 1971, is now routinely prescribed to manage pain. However, few current CAM therapies have been tested rigorously for safety and effectiveness.

Many consumers believe that if a product has been used for centuries, it must be effective, and if it is natural, it must be safe. To the contrary, there is mounting evidence that some CAM therapies expose patients to potentially toxic components or interfere with or displace effective conventional treatments. For example, a recent study demonstrated that when volunteers added St. John's wort, a widely used natural antidepressant, to a regimen of the HIV protease inhibitor indinavir, the serum level of indinavir fell below the concentration necessary for antiviral activity.[2] Similarly, another widely used herbal product, Ginkgo biloba, known to impair coagulation, may put patients at risk of hemorrhage during and following surgery.[3]

The Role of NCCAM

Lacking such knowledge yet enamored of the appeal of CAM practices, the American people have demanded that these be studied. In 1991, Congress established the Office of Alternative Medicine (OAM) at the National Institutes of Health, and in 1998 expanded its status, mandate, and authority by enacting legislation to create the National Center for Complementary and Alternative Medicine (NCCAM). NCCAM is charged to conduct and support basic and applied research (intramural and extramural), research training, the dissemination of health information, and other programs with respect to identifying, investigating, and validating CAM treatments, diagnostic and prevention modalities, disciplines, and systems. I was appointed NCCAM's first director in October 1999, drawn by the opportunity to address the major public health challenges that CAM represents. I was attracted equally by the opportunity to apply the uncompromising standard for scientific rigor to which I have aspired throughout my 23 years of conducting basic and clinical research in infectious diseases and immunology at the NIH.

To ensure that NCCAM proceeds with a sense of responsibility commensurate with the public trust it has been given, NCCAM has developed its first strategic plan (posted for broad public comment at

⟨http://nccam.nih.gov⟩ through June 21). In the plan we outline five cardinal strategic areas that will guide us in achieving our vision over the next five years: investing in research; training CAM investigators; expanding outreach; facilitating integration; and practicing responsible stewardship.

U.S. medical schools and teaching hospitals, and the AAMC in representing them, have pivotal roles to play in contributing to NCCAM's success. First, if NCCAM is to rigorously evaluate widely used CAM treatments for safety and efficacy and identify approaches that are worthy of more intensive study, we must recruit creative and experienced investigators to conduct the clinical research that is the centerpiece of NCCAM's research portfolio. They are needed also to carry out basic studies to determine underlying mechanisms of action of CAM treatments, discover biomarkers, define pharmacokinetics, and identify the active components in natural products, so that they may serve as the basis for rational drug design.

Expanding Medical Schools' Curricula

The AAMC can play an especially vital role with respect to facilitating the integration of rigorously proven CAM approaches into the ongoing education of physicians and the daily practice of medicine. Thus, I am gratified that CAM was highlighted on the agenda of the recent annual meeting of the Council of Deans and that I was invited to participate. In his keynote speech to the Council, Dr. Andrew Weil, a leading proponent of integrative medicine, spoke of the need to train young physicians about CAM. Few would argue against the wisdom of this notion. For, if we are to guide our many patients who are using CAM modalities toward a safe and more integrated approach, we must be knowledgeable about them.

The question, however, is what specifically should be taught? Much is self-evident. A more patient-centered and less paternalistic approach should be stressed. Medical students should receive instruction about proven CAM methods of pain management and palliative care. They should be provided more schooling than was available to my generation of students in the pharmacology of natural products, nutrition and exercise physiology, and the role of stress management in promoting health and preventing disease. Further, while aspiring physicians need not know how to put into practice alternative medical systems, such as Ayurveda and traditional oriental medicine, they should become familiar with their most basic principles. Finally, the curriculum should be enriched by exposures to the history of medicine, medical ethics, and medical economics.

In doing so, however, we must ensure that our idealistic and impressionable students are well grounded in the fundamentals. We must cultivate and promote both accomplished scientists and also clinicians skilled in the art of medicine to serve as role models for young physicians. We must respect the art of healing, while emphasizing the need to base treatment decisions upon rigorous evidence. And, we must define the limits of acceptable empiricism and when it is appropriate to say "No" to a patient. Most important, we must proceed with caution lest we perturb an otherwise effective educational system.

How CAM should be integrated into medical practice is another important question. One model that is espoused, perhaps not surprisingly, by some physicians envisions the incorporation of selected CAM practitioners into the existing conventional medical system. In contrast, CAM practitioners, fearing a loss of identity and purpose, argue that CAM and conventional practitioners should work in parallel. The placement of CAM disciplines relative to conventional medicine is a major health policy issue that the AAMC should consider and that the newly chartered White House Commission on Complementary and Alternative Medicine Policy is charged to address.

Given the vital role the AAMC plays in guiding medical education, NCCAM seeks to develop a strategic partnership with the Association to facilitate development of health education curricula that respect and incorporate insights and opportunities afforded by validated CAM and conventional practices. We wish also to work with the AAMC to overcome the reluctance of conventional physicians to consider CAM therapies that are proven safe and effective for their patients. Here, our strategy is to hold CAM therapies to the highest standards of evidence. Only by doing so will we best facilitate the merger of valuable CAM and conventional approaches into a practice of "integrative medicine," in which multiple health care professions work as an interdisciplinary team. Only in this way may we succeed in expanding the repertoire of ways to achieve and maintain health and restore an appropriate balance of both the art and the science of medicine.

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