

## ► INNOVATIVE MEDICAL EDUCATION

# What's Ahead for Med Ed?

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### ABSTRACT

**In response to biomedical advances and changes in the practice environment, medical education is always in the process of change. This paper deals primarily with educational changes involving the integration of the disciplines of genomics, prevention and population health, global health and integrative medicine into the curriculum. External and internal forces that tend to impede development of professional and humanistic values are also discussed along with the call to action for developing strategies that mitigate these forces.**

### INTRODUCTION

While the medical students here today are on the path to becoming physicians, the scientific foundation of clinical medicine continues to expand; new clinical applications of biomedical science and technology are discovered and deployed; the cultural, economic and demographic environment in which medicine is practiced continues the transformation that began in the 1970's. These changes will continue even after students graduate and proceed through the years of graduate medical education and beyond. This is why, whether they be practitioners or teachers of medicine, physicians must be independent, self-directed, and effective learners throughout their professional lives.

How does medical education respond to biomedical science discoveries and changes in the practice environment? It too must change in both evolutionary and revolutionary ways, sometimes by adding new learning goals; sometimes by integrating whole new disciplines; sometimes by altering the strategies of teaching and learning. Obviously and emphatically, medical education cannot be allowed to develop "static cling."

I would like to discuss just a few areas of educational change that are likely to be addressed with some vigor while medical students graduating this year are in their residency training. These students will need to figure out how to learn what their medical student successors will be learning. Current faculty will need to integrate new knowledge and approaches into their teaching. And for non-physicians, what more do your physicians need to know?

### GENOMIC MEDICINE

First on my list is genomic medicine. It was only about 15 years ago that the term "genomics" joined the medical vocabulary. The science of genomics takes us beyond the era when medical genetics was a tool for diagnosing only a few relatively rare- diseases inherited in a simple Mendelian fashion. Rather than being the study of single genes and their effects, genomics is the study of functions and interactions of all genes in the entire genome, whose sequence we now know in man, other animals, and microbes.

Unlike the relatively uncommon nature of single gene disorders, abnormalities in the interactions of multiple genes plus the influence of environmental factors are already known to play a role in such common diseases as breast cancer, colorectal cancer, Parkinson's disease, human immunodeficiency virus (HIV) infection and Alzheimer's disease. This list is probably just the tip of the iceberg.

Except for monozygotic twins, each of us has a unique genome, and this has enormous implications for patient care. Knowledge of a person's genome will enable us to predict that person's risk of common diseases and undesirable responses to the environment and to drugs. Thus, we have the potential for a genomically based practice of primary preventive medicine. We also have the potential for development of genomically based diagnostic medicine and therapeutics. Knowledge of microbial genomics will lead to better methods for preventing, diagnosing, and treating infectious disease and will also contribute to methods of bioterrorism defense.

The transition from genomic science to clinical genomics will not come easily or quickly. It will probably be another decade or two before genomics takes the center stage of clinical practice. But this is still well within the professional lifetime of the students graduating this year.

Drug and medical diagnostic companies are not waiting for a fully grown genomic medicine to happen. They are already developing novel human protein and antibody drugs through genomics-based research. They are already developing new diagnostic tests based on abnormal proteins that are the consequence of genomic dysfunction. We are beginning to see gene-testing and pro-

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tein-testing methods that flag patients with genetically based risks, identify persons at risk for developing adverse responses to certain drugs, and spot diseases before they are associated with symptoms. Gene chip diagnostics using DNA microarrays are already well established in diagnosing the most common form of non-Hodgkin's lymphoma. And just think, it was only about three years ago that the so-called lymphochip was invented, with its more than 18,000 snippets of genes associated with normal and abnormal lymphocyte development. Protein chips using antibody microarrays to detect abnormal proteins are not far behind.

I hope I have made the case for beginning immediately to greatly expand the teaching of genetic medicine in general and genomics in particular to the physicians of tomorrow. Indeed, at Einstein, this process is already well underway.

### PREVENTIVE MEDICINE

Next on my list of items for educational change is preventive medicine. I have already discussed how knowledge of a person's genome can serve as the scientific basis for practicing preventive medicine, albeit at the level of the individual patient. This still begs the questions: what kinds of knowledge and communication skills should a physician have in order to practice effective health promotion and disease prevention with individual patients?; what is the role of the physician in contributing to the health of populations.

From a colleague here at Einstein, I learned about a 19th century English physician named John Snow who, in 1854, traced the source of London's huge cholera epidemic to a single pump on Broad Street that was leaking sewage into the public's drinking water. He ended the epidemic by forcefully putting the pump out of commission. A few years later, still savoring his epidemiologic victory, Snow was among the first to recommend that preventive medicine be taught in medical schools; a hundred and fifty year later we are still waiting for that recommendation to be implemented. We should do it now.

Just imagine if each physician in the US was trained appropriately in the science and clinical application of prevention, what could be achieved in preventing the adverse medical, economic, or social consequences of smoking, inadequate diet, lack of exercise, accidents, domestic violence, lack of immunizations, occupational hazards, toxic environmental exposure, and substance abuse? Moving beyond the individual patient, just imagine how physicians could influence positively the health of populations if they are educated in principles of disease prevention and behavioral change appropriate for specific patient populations; if they learn the importance of respecting cultural and economic diversity; if they are willing to work as part of systems and as collaborators in

health care teams; if they accept at least some responsibility for the health of populations?

Most physicians of today would probably not oppose Medicare and Medicaid as individual physicians and the American Medical Association (AMA) did when these programs were first proposed by the White House in the early 1960's. On the other hand, I do not see too many of today's physicians or medical students taking robust stands against a White House economic policy that is likely to result in a huge reduction in health care financing during the next ten years. I am also concerned with the medical community's increasing tolerance for a health care non-system that permits more than 40 million uninsured individuals, including an enormous number of children. Need I remind you that we are still the only Western industrialized nation that does not have a national health insurance program except for the elderly or impoverished. We seem even further from the goal of universal health insurance today than when such a system was proposed by the White House in early 1992.

I am postulating that a pervasive and persuasive education in prevention and population health will stimulate more medical students to become the socially responsible and responsive physicians they should be. Perhaps, from the large number of students here at Einstein who participate in a myriad community based health programs, some will emerge to lead the way to a medicine of the future that embraces prevention, population health, and greater social concern.

### GLOBAL MEDICINE

Linked with the development of educational programs in preventive medicine, but in many ways standing on its own, is education in global medicine. There is no need for me to convince you of the interconnectedness of all peoples on this planet and how poverty, poor public health and sanitation, contagious diseases, and ecological disasters any place in the world can have medical consequences anywhere and everywhere. Aside from the practical necessity to educate future physicians in global health issues, such education should also include humanitarian medicine. The aim here is to motivate more physicians to bring the benefits of their knowledge and expertise to the cause of improving human health in less developed and emerging nations. This nation, with its great workforce of superbly trained physicians, should lead the way in global health efforts. Should we even imagine that global outreach in the health arena might one day become public policy, or is this an impossible dream?

### INTEGRATIVE MEDICINE

From genomics, preventive medicine and global medicine, I would now like to discuss integrative medicine as

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another topic for educational change. This new concept and approach to clinical medicine grew out of recognition by physicians that many practices and modalities of alternative medicine can and should be combined with the best of conventional therapies.

Integrative medical practice does not accept unconventional, alternative modalities uncritically; such acceptance requires scientific evaluation within the context of informed skepticism. Nevertheless, integrative medicine is open to ideas and views that, compared to conventional medical practice, offer a wider array of possibilities for health care with interventions that are more natural, less invasive, less toxic, and less costly.

An essential feature of the integrative medicine approach is that patients are viewed as whole persons with minds, spiritual needs and abundant mechanisms for innate healing. Mind-body medicine plays a huge role in the practice of integrative medicine. Largely due to the work of John Kabat-Zin and his colleagues at the University of Massachusetts Medical Center, mind-body medicine has a substantial scientific foundation and evidence base compared not only to other forms of alternative medicine, but even compared to many widely used conventional medical treatments.

Most importantly, integrative medicine places great emphasis on something that conventional medical practice is losing sight of, and this loss has not gone unnoticed by patients. The loss I refer to has nothing to do with state of the art drugs, technology, or life-saving procedures. I refer simply to the loss of primacy of the doctor-patient relationship, the caring bond and superb communication between caregiver and patient, a sense by the patient of the caregiver's commitment to his or her health, and the responsibility of the physician to engage the patient's participation in his or her health care. Viewed from this perspective, integrative medical practice is not just about herbs, biofeedback, acupuncture, nutritional supplementation, imagery and visualization, ethnic and cultural healing rituals and the like -- it is about much more. It is about restoring trust, caring, communication, patient participation, and commitment to the relationship between physician and patient. And this is why we should start educating students in the principles, concepts and practices of integrative medicine.

### PROFESSIONALISM AND HUMANISM

The last item for educational change that I want to discuss is the need to be more successful in promoting the values and behaviors of professionalism and humanism in our students. I am referring specifically to altruism, duty and service, integrity and honor, empathy, compassion, respect for others, and striving for excellence. Within the academic community and among the public, there is growing concern that physicians' historical commit-

ment to professional and humanistic values is withering. Indeed, there is ample evidence of the public's increasing skepticism about physicians being able to place their patients' interests above their own. Despite many studies about the causes of the eroding doctor-patient relationship, a satisfactory explanation has been elusive. This is not to say that managed care, capitation, constraints in health care funding and the increased need for documentation and productivity have not played any role in the decline of professionalism; but individually or collectively, these factors are not the complete story.

In the search for more compelling explanations for the decline of professionalism and humanism, we should examine what happens during the process of becoming a physician. The educational and cultural environment of medical schools has long been suspect with regards to nurturing students' professional and humanistic behaviors. In fact, medical schools are often seen as having a harmful influence on such behavior. I realize this can be overdone. I am not in the chicken little camp of educational reform and do not think the sky is falling. But I do see it full of gray clouds with respect to the influence of medical education on student behavior, especially in the hidden curriculum and the socialization process. To quote from one student who graduated recently not from another excellent medical school:

For two years lecturers parade up and down describing their own particular niche as if it were the most important thing for a student to learn. And then during the clinical years, life is brutal. People are rude, the hours are long, and there is always a test at the end of the rotation. After a while I reasoned that the most important thing I could do for my patients, for my fellow human beings, was to assure myself some peaceful time. I made a point of hoarding my extra time for simple pleasures. I read Perri Klass's novel in which she describes how physicians must relearn the ability to appreciate the mundane. Her point is that physicians must regain their humanity after they complete their training. For my part I tried hard not to lose it, or at least to hold on to it as long as possible. (Coulehan, J. and Williams, P. C., 2000).

Whatever inadequacies of medical education in promoting professionalism and humanism in its students may have existed in the past, they have been exacerbated greatly in recent years. Teaching hospitals across the land have been struggling to survive financially while still maintaining their educational and service missions. Much of the decline in hospitals' income is attributable to the growing unwillingness of private and governmental payers to factor education time into their reimbursement fees. The hospitals' response has been to require clinical teaching faculty to be more clinically productive and to

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devote ever increasing amounts of time to reimbursable patient care in order to compensate for revenue short-fall. This reduces the time faculty can give to teaching, research or community service, thus creating a more business-like ethos. In this kind of clinical environment it becomes more challenging than ever to make certain that the attitudes and behaviors characterizing professionalism are manifested on a consistent basis.

#### A NEW PROGRAM

Let me give you one example of a program developed to nurture a few qualities of professionalism and humanism, especially the quality of compassion. It is a program originally conceived and produced by someone who I view as one of the great people in American medicine, Rachel Naomi Remen of the University of California at San Francisco (U.C.S.F.) School of Medicine. She calls her program "Healing Arts." Originally developed for physicians experiencing burnout and the need to refresh mind and spirit, Dr. Remen then offered the program as an elective to medical students at UCSF. It was tremendously popular among the students and was soon replicated at Stanford, Dartmouth and a few other medical schools. In 2003, for the first time, a group of Einstein faculty gave the program to a group of 40 self-selected first year students.. They participated in five four-hour sessions (including supper, of course) during January and February with not a single dropout along the way. When asked about the most valuable personal or professional insights gained from the course, here are some comments the students wrote:

*"a chance to reconnect with my personality, attributes which I hope to incorporate into my life and career"*

*"must not lose my heart and compassion"*

*"the importance of not losing myself in the process of becoming a physician"*

*"sharing emotion (crying, hugging) can be beneficial for patients"*

*"developing confidence in what I will bring to my medical practice; not just science and diagnosis, but also relationships, caring, even fun"*

It is well to remember that these comments were from students who completed only five months of medical school!

#### CONCLUSION

In this talk, I've discussed very briefly five items for educational change at Einstein and at medical schools across

the land. These are genomics, preventive medicine and population health, global health integrative medicine, and professionalism and humanism There are many items I did not have time discuss, but they are no less important, e.g. palliative care, geriatric medicine, women's health, and cultural competency. With each passing year, new items may be added to the list and, of course, as we implement change successfully, some listed items may be removed. Different items will be put into practice at different rates. We have three-year plans, five-year plans, even ten-year plans. Items associated exclusively with knowledge and skills, like genomics, will be implemented faster. Items associated mainly with attitudes and non-cognitive behaviors, like professionalism and humanism, take much longer for change to occur. The major point is that we make an institutional commitment to addressing these items and actually produce change!

If we make this commitment and if medical students make a commitment to continue to learn, I think the namesake of our medical college would be very pleased. One of the perks we in the Dean's Office have is the opportunity to chat with Albert Einstein during periods when he takes much needed pauses from his journeys through the universe at the speed of light. After giving him a printed copy of this talk, he seemed annoyed and uninterested in what I had to say about the future of medical education. After all, this is the man who said he only wanted to know God's thoughts and that all the rest are details. But I reminded him about the medical college he gave his name to, and that seemed to arouse him. So he asked me to accompany him to his beloved office at the Institute for Advanced Studies in Princeton. There he listened to my ideas for educational change and read through my notes, which he complained about because there were no mathematical equations. He reminded me that he never thinks in words at all. He also hated the printed images of Power Point slides and was amazed when I told him that students cannot get enough of them. In the end, however, he smiled, expressed satisfaction, and encouraged me to go ahead with the plan for educational change. He said he would visit the school again in about five years to see how much we accomplished. What more motivation do we need?

#### ADDENDUM

Since the lecture on which this paper is based was delivered, medical schools across the country have taken significant steps to integrate at least some, if not all, of the disciplines discussed above into their programs of medical education. Almost all schools are enhancing their teaching of genomics, and many are developing programs that nurture and promote professional and humanistic values and behaviors. Here at Albert Einstein, the committee structure of the Division of Education (DOE), which is the college's body of faculty and students responsible for developing educational policy and pro-

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grams, has been reorganized in order to deal more effectively with all the educational changes discussed in this paper. The relevant new DOE committees are: Scientific Foundations of Medicine, Clinical Prevention and Population Health, Ethics, Humanism and Professionalism, and the Medical Student Projects Program. It is important to note that these committees are responsible for shaping the required curriculum and co-curricular programs throughout all four years of medical school so that new topics can be incorporated throughout the entire curriculum insofar as possible. The author is optimistic about the ability of these various committees to effect appropriate and effective educational change.

### REFERENCE

Coulehan, J. and Williams, P. C. (2000) Professional Ethics and Social Activism. In: Educating for Professionalism, Creating a Culture of Humanism in Medical Education. Wear D. and Bickel, J. (eds.), U. Iowa Press. Iowa City.

### NOTE

This paper is based on a lecture delivered at the College of Medicine's 45th Alpha Omega Alpha Induction held on May 1, 2003.