# Medical Education For The Twenty-First Century

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IT IS WELL TO REMEMBER THAT THERE IS NOTHING IMMUTABLE ABOUT THE present structure of academic medical centers, which is not to say that the substance of what they do will change, but their configuration may be different.

All of you are familiar with the Flexner report and its impact on American medical education, so I will not repeat what you already know. But I would remind you of the prelude to Flexner's seminal report and the epilogue to the reforms catalyzed by Bulletin No. 10 of the Carnegie Foundation for the Advancement of Teaching. Ludemer has pointed out that active reform of medical education began in a few institutions years before the Flexner Report, and all of the changes he recommended were in place at Hopkins and a few other medical schools by 1910, as Flexner himself conceded. It is quite likely that reform would have spread without Flexner, perhaps more slowly, but probably with the same result. I say this because the leaders of the medical profession wanted reform and wanted to be rid of the proprietary schools that were little more than diploma mills. And they wanted reform because the science of medicine had become so important, thanks to the advances in physiology, bacteriology, and pathology made largely in Europe during the second half of the nineteenth century.

The epilogue is equally important, for today's academic medical center with its array of professional schools, its faculty practice plan, and its large-scale research establishment was not a part of Flexner's blueprint, the point being that there has been an almost continuous evolution of the academic medical center, née medical school, during most of this century.

Further change will undoubtedly occur, but it will be evolutionary, perhaps accelerated as happened at the beginning of the century, but hardly a convulsive revolutionary change. Not only is incremental change our style, but there is enormous inertia in the present system that, together with the very large amounts of money supporting our academic medical centers, will impede rapid change. You will note that I said "academic medical center" rather than "medical education," for the education of medical students has become, for most medical centers, a very small part of what they do.

The way in which the medical education establishment evolves may not change very much, but the impetus for change this time will be very different from what it was at the beginning of the century. Then, it was the leadership



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of the medical profession who wanted reform; this time it will be outside influences that force change.

WHAT ARE THE OUTSIDE PRESSURES? LET ME LIST SOME OF THEM. FIRST, there is a growing dissatisfaction with our health care system, and this in turn has led to questions about the education of medical students and specialty training. Large payors, specifically the federal government and corporate America, are deeply concerned about what seems to them an inexorable increase in medical care costs despite all sorts of applied remedies. Because academic medical centers are the leaders in the introduction of high-cost technologies and because they train all of the expensive specialists, academic health centers are looked upon as a part of the problem.

With the most expensive medical care system in the world, one might think that consumers of care would be more satisfied than citizens of countries that spend far less per capita. Not so. According to a recent Harris poll, citizens of Canada and Great Britain are far more satisfied with the care they receive than are Americans.

Further, almost everyone is concerned about the growing number of uninsured people, estimated to be about 35 million, and our apparent inability to do much about it.

Second, whether the reality or the perception, or perhaps a little of both, physicians appear to be losing their autonomy as a profession. Just as war is too important to be decided upon by generals, so health care has become too important, or at least too expensive, to be left in the hands of physicians. Physicians are becoming more and more accountable to payors and to patients. Even the leadership of medicine, whether practicing professionals or academics, feel beleaguered by all the forces impinging on professional decision making. The natural tendency under these circumstances is to change as little as possible.

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Third, there are many reasons why Americans say they are dissatisfied with our health care system, some legitimate and some that are not. One reason given that is important because of the demographic group voicing its displeasure is the preoccupation of the medical profession with curative medicine rather than prevention and the preservation of health. Middle-class America has discovered "health." It jogs; it eats a great deal of fiber; it avoids eggs, beef, and all kinds of saturated fats; it wants the Dow-Jones average to go up and its cholesterol to go down; it worries about pesticides and nuclear energy (but less about fast cars); and it has made cigarette smoking socially unacceptable. It faults the medical profession for not taking the lead in making us a health conscious country and decries the profession's preoccupation with disease rather than health — that is, until one of its own gets sick, and then it wonders why there is not a quick cure for whatever the ailment may be.

Fourth, another outside force over which the practicing physician has little control is the rapidly changing world of medical knowledge and medical technology. A young ophthalmologist, with whom I talked this summer, told me that when he had finished his residency and fellowship training at the Massachusetts Eye and Ear Infirmary, he felt up to date on all matters concerning the cornea — but subsequently, 8 years later, he feels that he has fallen behind and must spend more time catching up. Imagine how physicians feel who must encompass an entire specialty such as internal medicine. There



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is so much to know and so little time. Yet physicians are supposed to know everything there is to know about their specialty whether primary care or ophthalmology. And they are held accountable by their patients, the payors, and ultimately by court of law.

Fifth, all of this affects the doctor-patient relationship. Physicians are no longer the authoritarian figures they were in the middle part of the century. Patients expect that their physicians will share information with them, and they want to play a role in decision making. More and more they hold their physicians accountable if things go wrong — even complications over which their physicians have no control. The prestige physicians enjoy continues to be high, right up there with Supreme Court justices, but it is gradually declining, a matter of some significance when it comes to the public's trust in doctors to make the right decisions about our medical care system or even our medical schools.

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Sixth, no other institution, public or private, has had more to do with the evolution of academic medical centers following World War II than the National Institutes of Health (NIH). Its influence continues to be pervasive, but the relation has changed from one that was highly permissive to one that is far more rigid. In the 1950s and 1960s, two decades during which the NIH budget increased by approximately 15 percent a year, there was the tacit understanding between NIH and the nation's medical schools that research support was meant to help fund medical education. It was further understood that NIH research training grants could also be used for the training of subspecialists destined for practice. The rationale for this was that there were too few practicing subspecialists. All of that has changed; research grants are meant to support research and research training grants are just that. No longer is it possible to juggle the accounts, figuratively speaking. The cozy arrangement of those earlier years has been replaced by much more formal relations, and today few would claim that the NIH supports medical education or that it should.

WHO THEN WILL PAY FOR MEDICAL EDUCATION? AND WHAT DOES IT REALLY cost? Despite a number of studies on the cost of medical education, no one really knows the answer. That is because so much of the support of medical education has been indirect, first by the NIH, and, more recently, by faculty practice plans, the origins of which can be directly traced to the NIH. NIH training programs in the medical subspecialties developed a cadre of full-time academic specialists who formed faculty group practices. These now represent the single largest source of support for academic medical centers. The third source of indirect support for medical education comes from third-party payors who support residency training programs. Indeed, the most expensive part of medical education is residency and fellowship training. The difficulty is in how one does the accounting. To what extent do residents teach medical students? Residents, and even medical students, render direct services to patients. How does one account for this? Till now, no one has tried very hard to separate those costs.

WHAT IS THE LIKELIHOOD THAT THESE SOURCES OF INDIRECT SUPPORT OF medical education will continue? First, let us consider federal funding. There is absolutely no evidence to suggest that the NIH will become more



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lenient in its requirements for institutional accountability for the use of research funds. In fact, the opposite is true. Research funds will be used only to conduct research; they are not meant to support teaching. Nor is the federal government likely to provide direct support for medical education as long as physicians are among the highest earners in our society. Federal support for medical schools was provided in the 1960s and early 1970s when it was believed that we had a shortage of physicians, but, contrary to the belief of many, this was never meant to be permanent federal support for medical education. And it was discontinued when a presumed shortage suddenly became a putative surplus.

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Faculty practice plans depend on high fees from specialty practice so that faculty practioners can be well paid while generating a surplus. The surgical specialties in particular are large moneymakers. Any significant change in physicians' reimbursement, such as a cap on fees or patient capitation, could have a profound effect on the usefulness of faculty practice plans as a source of support of medical education.

Third-party payors, particularly the Health Care Financing Administration (HCFA), are beginning to question the extent to which health insurance should pay for the education of residents. Certainly, we can expect third-party payors to ask for a better accounting of the distribution of time between education and service during residency training.

Questions about reimbursement for residency training are troublesome enough, but there could be a far greater worry for academic medical centers with large training programs. Few academic physicians realize how vulnerable the present funding of residency training is. Consider the following: The federal government is now the major source of hospital reimbursement including the cost of residency training. Suppose that the Congress decided to use its influence to change radically the distribution of physicians among the specialties, partly to control costs and partly to increase the number of primary care physicians. It could do so by limiting the number and kinds of residencies that HCFA would pay for. This would require the participation of the executive branch, and HCFA would have to come to some agreement with the specialty societies about numbers and the geographic distribution of residencies. But this could be done, and the private insurers would be quick to follow.

WHERE DOES THIS LEAVE US FOR THE FUTURE? WHO WILL PAY? THE preclinical years, at least the first one and one-half years, are more like the undergraduate than the clinical years. Presumably they would be paid for in the same way as undergraduate education — namely, tuition, endowment, and state support of state schools. The clinical years pose a different kind of problem, and, as I have argued in the past, there is a continuum of clinical training beginning in what is now the 3rd year of medical school and ending with the completion of residency. At the beginning, clinical training is mostly education, but as the student progresses, he or she provides more and more service, so that in the final year of residency, the resident is about on a par with an attending physican in terms of care provided. There may need to be a different kind of accounting for all of clinical training in the future, one that recognizes that even medical students provide service to patients. Given the



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continuum I have just described, it makes little sense to go abruptly from a high tuition payment to a salary between the 4th and 5th year of medical education.

Even more important will be some agreement among third-party payors on how to pay for the training of residents in ambulatory medicine. Part of the problem of training for primary care has always been the way residencies are paid for. They are assumed to be entirely hospital based with most training involving the care of hospitalized patients. Certainly, some redistribution of payments will need to be made if there is to be a significant increase in the use of ambulatory settings, including HMOs, for clinical training.

IN MY INTRODUCTION, I INDICATED THAT THE FUNCTIONS OF ACADEMIC medical centers will continue, but there may be changes in the way they are organized. Perhaps the most important change will be an accentuation of what is already true, namely, the differences among academic medical centers at present, for they are not a homogeneous group and never have been. All academic medical centers aspire to become research centers, but research is likely to become increasingly concentrated in those centers that already have a strong research presence. Centers associated with research universities are particularly likely to be favored. Biomedical research, whether carried out in university departments of biology or in medical school preclinical or clinical departments, is becoming more and more sophisticated and dependent on complex instrumentation. A critical mass of investigators is essential, and not every medical center can provide the intellectual environment in which modern biomedical research can flourish. Research funding by the NIH is becoming more and more competitive, and there is little opportunity for the young investigator to get a research award unless he is very well trained in research and can devote the major part of his work week to research. The triple threat person equally at home in the laboratory, in the classroom, and at the bedside may be a phenomenon of the past.

What all this means is that some medical centers will resemble research institutes while others will have very small research establishments that constitute only a small portion of the medical center's activity. Research training will be concentrated in the research intensive medical centers, and young investigators will cluster in such centers causing a further concentration of research activity.

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Health services research will expand, but here, too, it is likely to be concentrated in those centers that have the competence to deal with large data bases made possible by the computer.

These are also the centers that are most likely to provide the leadership and guidance for large multicenter clinical trials that are already the norm for the evaluation of new drugs and procedures.

Most academic medical centers will continue to serve as tertiary care resources, something they are accustomed to doing and by and large do well. Whether, in addition, some will attempt to become leaders in regional efforts to organize patient care remains to be seen. Those so inclined could perform an important role in helping to structure comprehensive care on a regional basis and in training the manpower to provide the necessary services.

In some ways, the future of teaching is the most difficult to predict. Certainly, every attempt will be made to keep and to fund residency and



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fellowship programs, for these are considered to be the lifeblood of the medical center. But it will be the payors who ultimately decide the future of residency training. The teaching of medical students has a much lower priority, and it is quite possible that in some medical centers the teaching of the preclinical sciences will be returned to the university. I say returned because most academic medical centers are philosophically remote from the rest of the university. They can only survive by providing services that have very little to do with other university functions, and more and more one finds universities distancing themselves from their medical centers. Even in the research intensive universities, the relation with the medical centers — if any — may be remote.

The major question is, will there be any effort to integrate clinical teaching at the medical student level with residency training?

WITH ALL THAT I HAVE SAID SO FAR AS BACKGROUND, WHAT I WOULD LIKE to do now is develop a single scenario of what might happen given a certain set of conditions — largely external to the medical establishment. This is not a prediction, but rather a way of looking at the future based on certain assumptions:

- There will be increasing pressure to contain costs, making it difficult to subsidize the cost of teaching from money provided for research and patient care.
- The federal government will not subsidize the teaching of medical students as long as the present earning power of physicians is maintained. Neither will the federal government try to attract medical students into the primary care specialties by providing scholarships or low-interest loans. Past experience teaches that this strategy doesn't work very well.
- State legislatures will be under budgetary pressure to restrict the funding of state medical schools. States will be hard pressed to meet the demands for an improved urban and rural infrastructure, for housing, for primary and secondary education, and for welfare, so that medical education will not have a very high priority. Most states already realize that state medical schools do not guarantee an appropriate number and mix of generalists and specialists to meet the medical needs of its citizens.
- The concept of a single payor on a statewide basis becomes popular as one way of controlling costs and providing subsidies for the uninsured. The single payor is a hard bargainer with hospitals and physicians. (The idea of a single payor has been proposed by David Axelrod, New York State Commissioner of Health.)
- HCFA decides to control the distribution of residencies among the specialties. In collaboration with the specialty societies, quotas are set for each specialty, taking into account the need for regional representation.
- At the federal level, competing demands for the funding of defense, social programs, and entitlement programs, together with a reluctance to raise taxes, result in modest growth of research funds — little more than is needed to meet the cost of inflation.
- In the absence of generous federal subsidies, states continue to have heavy financial obligations.
- Philanthropy does not come to the rescue for the following reasons:

  Foundations have more money for grant-making, but large foundations, including those that are new, are proactive. They wish to choose their own areas of concern and have little interest in supporting academic medical centers in fiscal trouble. By and large, foundation professionals believe



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that academic medical centers themselves are largely responsible for the problems they are having.

Individual philanthropy increases, but larger givers seek the advice of professional consultants, most of whom have worked for large professionally operated foundations. More and more, the giving pattern of individual philanthropists resembles that of private foundations.

Corporate philanthropy continues, but does not rise because of increasing international competition. Giving is likely to be directed toward areas of corporate interest and will be influenced by the degree of control held by foreign investors.

- Concern about the high levels of debt incurred by medical students results in a further drop in the number of medical student applicants. This trend is compounded by the generally held view that the high earning power of physicians may be eroded by the inevitability of some kind of control of the cost of medical care. As a consequence of the drop in the number of medical school applicants, medical school tuition levels off. Some schools actually reduce tuition in order to remain competitive.

Obviously, all of these constraints will affect academic medical centers and, as a consequence, medical education. Not every medical school will need to change dramatically, but some will, and those that are successful may become the models for the future.

HERE IS A STRATEGY THAT A STATE SCHOOL OR A PRIVATE SCHOOL WITH moderate resources might pursue:

- Preclinical departments could be combined with university biology departments in such a way that molecular and cell biology, as well as systems physiology, could be offered both as undergraduate subjects and as prerequisites for medical students. Modern pharmacology could find a home with biochemistry, and even experimental pathology has more in common with cell biology than the autopsy room. The fact is that there is nothing unique about the preclinical sciences, including anatomy, that would prevent them from finding a comfortable home in the biology division of a university. Oxford has offered physiology, anatomy, pharmacology, and pathology as undergraduate subjects for many years without compromising the education of the physician.

  Such a combination would save the university money because there would not need to be a duplication of effort; it could enrich undergraduate instruction, and if desired, it could save a year's tuition if the student wished to combine the last year of college and the first year of medical school. Past arguments that nothing should invade the sanctity of 4 years of college may give way to the realities of high tuition and the burden of student indebtedness.

- There is a change in the structure of full-time faculty:

  Because faculty practice no longer provides a significant surplus, group practice arrangements are changed.

  — Most faculty are part-time in reality if not in name. They are responsible for their own support via group practice.

  — There is a direct tax on practice income to be used for medical education. This is adjusted according to the cap on physician's income.

  — Part-time faculty have a teaching obligation. This is essentially a return to what existed in the past.



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The primary care faculty is expanded. Most are part-time but there is no tax on income. There may need to be subsidies for some part-time physicians who have a heavy teaching load.

The true full-time clinical faculty will be much smaller.

— Those who do research and do some teaching will be largely supported from research funds.

— Those who are paid full time for teaching will be a small group. They may in addition provide some service and do some research, but their primary responsibility will be the education of medical students.

- The teaching of clinical medicine will be organized differently:

  Pathophysiology and the introduction to the clinic will provide the bridge to clinical medicine. Full-time faculty will conduct and supervise this instruction using part-time faculty when appropriate.

  Full-time faculty will be responsible for arranging the clinical experience and will be more heavily involved in teaching at the beginning of clinical experience than in the later clinical years with both inpatient and ambulatory patients.

  There will be a greater use of ambulatory settings for the teaching of clinical medicine. This will include experience outside the hospital outpatient department and will involve HMOs and group practices. Because ambulatory medicine is more difficult, it will come after initial inpatient experience.

  As the student progresses, more and more responsibility for teaching will be assigned to part-time staff.

- There will be experimentation with combining 2 clinical years of medical school with the first 2 years of residency either on an individual school basis or with a consortium of schools. The majority of students will enter the primary care specialties and potentially could complete training in 4 well-planned clinical years.

This scenario may seem somewhat far-fetched today, but it is a possible one, and even more Draconian changes may be in store. The most important point I wish to make is that we are at present in the process of evolutionary change, which is quite likely to be more rapid during the next decade or two. Significant evolutionary change occurred at the beginning of this century, and equally important change may be happening now, but with a difference. At the beginning of the century, it was the medical leadership that wanted change and shaped it. This time, external forces will be the engine of change, and that fact, more than any other, causes deep anxiety among both academics and practitioners.

I hope the profession will be creative in dealing with the need to change and will add to the great accomplishments of American medicine by making the provision of care more rational and more equitable.



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