**EDITOR’S NOTE**

**The New Face of Medical Education**

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Although a moment of calm has descended on federal legislative efforts to overhaul our national health care system, a quiet revolution is still at work. The driving force of that change will be US business interests. Under a system pioneered by health maintenance organizations, doctors are now asked to deliver adequate care, instead of care that maximizes the use of advanced medical resources. Residency education has been caught in the crosshairs of this new paradigm.

Cost consciousness in medicine was barely on the horizon 30 years ago. Residents were trained to recognize and treat improbable and rare diseases. Today, the medical case that does not fit a neat algorithm quickly comes to the attention of a small battalion of case managers. It is not unheard of for discharge planning to begin even before the patient enters the hospital. Perhaps more than anything, the hurried pace of health care delivery has changed the resident’s appreciation of the course of illness.

An increasing proportion of resident training now takes place in the outpatient setting. Diagnosis is quicker, and more time is spent with healthier patients. While these changes are not without benefit to patients, for medical trainees educational opportunities are lost by not being able to follow a particular illness until it is resolved.

Today’s decisions are made farther from the bedside and according to algorithms established by statisticians. While this reduces idiosyncrasies in treatment, it also tends to shortcut the process of thinking through complex problems and all their alternative solutions. At the same time, as Lloyd Krieger points out in this issue of *MSJAMA*, the increased supervision of residents demanded by third-party payers and government regulators has reduced the responsibility and autonomy of trainees. Funding for residency training is itself constrained, and government regulators has reduced the responsibility and autonomy of trainees. As Bobby Jindal discusses, this leaves medical educators with little wiggle room from which to escape the intentions of those who would place profits ahead of sound medical education.

As in any struggle, these changes lack moral certainty and immediacy of effect. Subtle effects lie hidden and sometimes unfold in further doubts. In this issue, Ivan Oransky discusses concerns over the number of residents leaving medicine. Perhaps this is one early indicator that something is amiss. The final outcome of current changes in residency training will not arrive soon. It will be heralded by neither a new, sweeping legislative bill nor another corporate initiative to trim spending on health care services. The final analysis will be made in another time, when today’s medical trainees take the helm and exercise the knowledge, skills, and virtues that they are learning now.

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Medicare Antifraud Initiatives: Effects on Resident Education
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As a surgery intern 5 years ago, I watched as chief residents performed operative procedures on their own. Attendings were always in the hospital to supervise care, particularly at the university hospital. But the degree of independence afforded the chief residents an opportunity to start cases themselves. On the floors, senior residents and chiefs performed minor procedures without direct supervision.

Today, Medicare’s antifraud and abuse programs have put an end to any degree of quasi-independence for even the most senior residents. Medicare’s rules require that attending surgeons be present for the ill-defined “crucial” part of every procedure and personally examine and evaluate new patients. The new rules require attendings to actively participate in “examining patients and doing procedures.” This broad language guarantees that the new rules cover essentially every aspect of a resident’s training.

Many of Medicare’s rules are vague and their interpretation and enforcement capricious, yet they are being supported with vigorous resources. Antifraud units will receive more than $100 million this year, and the figure will increase to $200 million in the year 2002. The FBI has 350 agents working on more than 2300 health fraud cases. The Internal Revenue Service and Department of Health and Human Services have each doubled the size of their health care fraud units. Signaling increasing resolve, the Justice Department has just hired 115 additional lawyers to prosecute these cases in court.

Aware of the impressive collection of resources being used to enforce the Physicians at Teaching Hospitals (PATH) antifraud initiative, attending physicians at teaching hospitals have grown cautious of running afoul of the new rules. As a result, attendings believe they must perform essentially all care on their patients. PATH is therefore having profound effects on how residents are trained: “See one, do one, teach one” is often being replaced by “See one, see another, watch as one is taught.”

The Past: Young Physicians Running Amok?
The PATH initiative results from concerns that in the past partially trained physicians performed procedures that should have been undertaken by fully trained physicians. Its architects hope to prevent mistakes and their attendant morbidity and mortality. Regulators are also concerned with the way Medicare funds are spent since resident salaries are indirectly drawn from these monies. If a resident performs a procedure that an attending does not supervise yet submits charges for, then Medicare is paying twice for that procedure. That practice could reasonably be labeled fraud or abuse. If a military contractor practiced that sort of government billing policy, few would defend it.

Independence has educational value, however. This is especially true in surgery, where there is no substitute for actually performing the procedure. William Halsted, the father of modern surgical training, advocated a graduated increase in responsibility and independence for residents.

Once I have the requisite background and training, I will learn more as a surgery resident if I hold the scalpel, examine the abdomen, and read the computed tomography scan at 2 AM. If my attending is by my side for each of these maneuvers each time I do them, I may still learn but I will not learn as quickly or perhaps as well. Independence with a safety net lets me feel the anxiety of responsibility while protecting the welfare of my patients.

Unfortunately, there is no reliable way to quantify whether and how any of these changes will actually affect the performance of those graduating from these residency programs. We will not learn of any adverse effects until years from now.

The Future: A Search for Balance
What is needed is a plan for the future of resident education that is fair to patients, taxpayers, attendings, and residents. The government must understand the goals and necessary processes of the education they are funding. Attendings must know precisely what the government is now requiring of them in terms of supervision. Patients must understand that even when a resident is taking a conspicuous role in performing their care, an attending physician is supervising and assuring quality.

Perhaps part of the social contract that allows hospitals to receive government funding for health care should include the training of young physicians. Close monitoring and controls must of course be kept in place. Institutions that do not want to participate in federal programs can pay for patient care themselves or through private insurance. While this solution is hardly perfect, it offers a starting point.

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Since Medicare’s inception in 1966, the federal government has used the program to subsidize resident training, and graduate medical education (GME) has thrived. Recently, however, some policymakers have begun to explore whether more appropriate and better ways can be designed to accomplish the same objective. Medicare originally included GME costs in its reimbursements to hospitals for treating beneficiaries. Faced with rising expenses, however, the government in 1978 set limits on the total amount of reimbursements hospitals could receive. These cost limits were set higher for teaching hospitals to recognize the extra expenditures associated with conducting medical education.

In 1983, Medicare initiated another cost-saving measure, the inpatient prospective payment system. This new system also earmarked additional funds for teaching hospitals and divided the costs of medical education in 2 categories, those deemed to be directly related and those indirectly related to education. Direct medical education (DME), which continued to be paid on a cost basis, includes such items as salaries paid to residents and teaching staff and the expense of maintaining classroom space. Indirect medical education (IME), which encompasses items such as the extra diagnostic tests ordered by trainees, is paid by adding a fixed percentage to the prospective payments to the hospital. Beginning in 1985, DME payments, which are computed on a per-resident basis, have been adjusted upward only for the economy’s overall rate of inflation.

However, Medicare’s payments for educational costs continued to rise sharply during the 1990s, from approximately $4 billion in 1990 to $7 billion in 1997. This increased spending did not resolve problems surrounding GME, in particular the maldistribution of the physician workforce. Even though most analysts agreed that the United States faced a manpower shortage in particular medical specialties and geographic areas, some also believed that as the number of residents increased from 1990 to 1997 by more than 20% to approximately 100,000, the country already had an excess number of physicians. In 1997, Congress capped the number of residents subsidized through the Medicare program. At the same time, Congress authorized transitional payments to hospitals if they reduced their number of residency slots.

Policymakers have now begun asking even more fundamental questions about GME. For example, Why does the government treat GME differently from other professional education? The consensus seems to be that GME represents a public good that deserves federal support. In addition to carrying out educational missions, teaching hospitals point to the specialized and costly care units they maintain such as burn units and trauma centers, their investments in medical research, and in some cases, the high levels of uncompensated care they provide. The Association of American Medical Colleges and others argue that without government initiatives, such activities are unlikely to be funded in today’s competitive health care market.

Medicare and, in some states, Medicaid are the only major payers to make explicit provisions for paying the costs associated with GME. Some policymakers recommend that in the future, Medicare’s payments should be supplemented by mandatory contributions from private payers such as health maintenance organizations and insurance companies. Private health care plans, however, contend that they already support GME through the higher payments made when their beneficiaries use teaching hospitals for specialized care.

Should GME Subsidies Be Funded Through Medicare?

While most lawmakers agree that the government should subsidize GME, some suggest that it would be more appropriate to finance education outside the auspices of the Medicare program. Medicare’s payments for education costs are currently borne by the Hospital Insurance Trust Fund, which is financed through a payroll tax and is considered by many to be a dedicated source of revenues for inpatient care for elderly and disabled persons. This trust fund is projected to be bankrupt in approximately 10 years, just as the first wave of 77 million baby boomers retire. Removing the financial burden imposed by financing education would extend the trust fund’s life by approximately 5 years.

A compromise proposed by some analysts is for Medicare to pay the indirect costs associated with GME, which totaled $4.6 billion in 1997, but to seek another source of revenue to pay for the direct costs, which totaled $2.2 billion in 1997. The thought is that the direct costs, which are closely related to education, should be borne by the entire population, but that it is appropriate for Medicare to pay the indirect costs, which are more closely related to patient care.

Most analysts, regardless of where they stand on these competing initiatives, have no intention of eliminating the federal financing of GME. Even many proponents of change argue that the current level of support should be maintained—though funded outside the Medicare program—until a consensus can be developed on the more fundamental challenges. While some policymakers emphasize the...
advantages of a guaranteed funding source to support the missions of teaching hospitals, others argue that regular reviews of the appropriations process would increase accountability and ensure that funding for GME competes with other government budget priorities.9

How Should Payment for GME Be Determined?
Regarding how GME is eventually financed, many lawmakers advocate that the government change the manner in which this subsidy is allocated. In 1995, Medicare payments to finance medical expenses associated with GME averaged $84,000 per resident. Although more than 25% of residents received training in hospitals that received more than $110,000 per resident, 10% of residents trained in hospitals that received less than $35,000 per resident. Indirect costs for medical education also vary significantly across training programs. For example, in 1995 the average payment was $60,000, but some hospitals received significantly less than that amount, while other institutions received more than $100,000. These variations cannot be explained by differences in salaries paid to residents nor by adjustments for differences in living costs across regions. As a result, these variations have drawn scrutiny.3

In 1983, Medicare’s add-on percentage to inpatient prospective payments for the indirect costs was set at 11.59% for each 0.1 increment in a hospital’s resident-to-bed ratio. Hence, if a hospital has 1 resident for every 10 beds (ie, a resident-to-bed ratio of 0.1), its payments would be 11.59% higher than an identical hospital without a teaching program. If a hospital has 1 resident for every 5 beds, the add-on percentage would be doubled to 23.18%. The add-on percentage was subsequently reduced to 7.7% and will be reduced to 5.5% percent by 2002. Some agencies have proposed that the add-on percentage be examined and perhaps reduced still further.7,8

While many agree the current formulas have resulted in unintended variation across similar programs, there is no consensus on how to change them. Some have advocated the creation of a voucher to pay for the direct costs, which would follow students whether they chose to train at a hospital, physician group, rural clinic, or a combination of sites. Proponents of this proposal say that competition for residents engendered by vouchers would make training programs more responsive to changing educational needs. Some teaching hospitals have maintained that the voucher system is unnecessary because training programs already compete for candidates.9,10

How Should GME-Related Issues Be Managed?
Lawmakers have also expressed interest in the idea of using Medicare’s financial leverage as a means to influence various policy issues. One area that has attracted attention from policymakers is determining the ideal sites for resident training. A second area of interest is in striking the proper balance between the number of specialists vs primary care residents who are trained in this country. A third is deciding on the appropriate number of international medical graduates to be trained in US residency programs. An example of how Medicare financing can influence policy is a recent law enacted by Congress that made it easier for nonhospital training sites such as health maintenance organizations and rural health clinics to qualify for Medicare’s educational payments, a policy supported by those who advocate training more generalists.

A final question is whether federal support for health education should be expanded to provide funding to a wider range of educational initiatives. One area of interest is pediatrics. Because federal subsidies for GME are largely based on the Medicare program, whose enrollees primarily consist of the elderly and disabled, children’s hospitals do not receive much funding compared with hospitals that treat adults. Another area of interest is nonphysician providers. Training programs for certified registered nurse anesthetists are currently the only advanced-practice nursing programs eligible for Medicare’s educational subsidies. The National Association of Children’s Hospitals, the American Nurses Association, and the Pew Commission have all recommended that the federal government expand its support in one or both of these areas, although not necessarily through the use of Medicare funds.

Comment
The clinical training that doctors receive after graduating from medical school is clearly a vital component of our country’s health care system. Medicare policies can have a profound impact on that training, as they will determine the role and method of government financing, allocation formulas, and reimbursement policies.

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Within the ranks of internship classes across the country are a number of fledgling physicians who will be retiring from medicine long before they ever set up a practice. One colleague of mine is starting a computer software company. Others are dazzled by the 6-figure salaries and glamorous travel afforded by many consulting firms. The reasons for this exodus are not difficult to understand. Frustrated by the diminished social standing, stagnant salaries, and loss of autonomy suffered by physicians, smart, hard-working young people fail to see the point of sacrificing years for little return. In Britain, many house officers must worry that they will not have jobs once they finish their training.¹ The level of unhappiness among their practicing physician role models may be at an all-time high.² There exist rewarding jobs for doctors, but with many opportunities being taken up by less costly and less well-trained physician assistants and nurse practitioners, those left are often geographically or professionally undesirable.

The phenomenon of young physicians leaving medicine begs a philosophical question medical educators and policymakers will be forced to grapple with if current trends continue. In its simplest form, the question becomes: What do we owe to those patients who have volunteered their stories and bodies to provide our training?

When we enter medical school, we enter a tacit, contractual agreement between ourselves and our patients. In exchange for the future privilege of being called “doctor,” of commanding some degree of social prestige, and of earning relative financial stability, we agree to provide medical care to those who need it, in exchange for being permitted to “practice” on our teaching hospitals’ patients, who might suffer an extra IV stick, a longer than usual history-taking, or even a misstep in the middle of the night.

One might argue, then, that those physicians who leave medicine during or soon after their training are violating this contract. An analogy is the National Health Service Corps, a more direct way that the government has seen fit to ensure that patient populations especially in need of health care receive it. This year the federal government will spend $302 million on this project.³ In this case, the contractual agreement is much clearer: in exchange for debt forgiveness, young physicians will practice in underserved areas of the country. A more subtle form of this contract could be said to be in operation at state-financed medical schools, many of which display a strong preference for in-state medical school and residency applicants. In this way, state governments are ensuring health care for the taxpayers who subsidize medical education. There is a choice: those who do not wish to practice where the government wishes may pay for medical school themselves.

Are those who leave medicine after enjoying this bounty then reneging on their part of the bargain and taking advantage of others’ beneficence? Similarly, are those patients who refuse to give of themselves for the good of medical education being selfish and sacrificing the health care of those who come after them?

Neither of these questions has a clear answer. Society has always tolerated the knowledge that a certain percentage of those entering medical school will not practice as physicians in the usual sense. Given the tremendous debt burden incurred by these medical school graduates, some might argue that they have already paid their societal dues. Of the 83.2% of graduating medical students in 1997 who incurred educational debt, the mean debt is $80,462 compared with $75,103 for 1996 graduates.⁴ A significant proportion of those physicians who do not go on to practice are MD-PhD graduates, many of whose training is subsidized by government funds, and who are responsible for many life-saving advances. Society also values some of those who leave medicine and pursue entirely different careers. Would writers and politicians who trained as physicians be able to offer the same insights without having graduated from medical school or completed residencies?

Similarly, society should not ignore the individual in its quest for health care. Young physicians whose minds are occupied with pursuits other than medicine should not be forced to remain in the field. Patients and established doctors should ferret out the reasons why medicine seems so unattractive to younger members of the profession. Medical students and residents, however, should not take lightly the sacrifices made for them by their patients. The trickle of young physicians leaving medicine should make us come up with better guidelines and understood agreements, however, lest the trickle become a flood.

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IN THE CURRENT MEDICAL ERA IT MAY BE DIFFICULT TO
imagine a time when optimism reigned in medicine,
interns and residents loved their work, and the public held
physicians in high esteem. This was the atmosphere in which
I started my internship in July 1954.

World War II was over and prosperity and optimism
marked the mood of the nation. Medical science received a
big boost because of its achievements during the war, and
the public at large had begun the romance with science that has
continued to the present time. Physicians' authority was
generally accepted and arose from their command of medi-
cal science and knowledge of disease. Physicians prided them-
selves on the fact that they made the decisions for their
patients, and by and large patients respected their doctors
and did what they were told.

We thought of ourselves as being at the acme of medical
progress, yet the era of technological revolution in medi-
cine and the era of therapeutic efficacy was just beginning.
There were no intensive care units; cardiac, pulmonary, or
renal resuscitation did not exist. Cardiac catheterization had
just started and cardiac surgery was in its infancy. As an ex-
ample of the state of the art, in 1954 one of my patients was
to be treated experimentally with intravenous streptoki-
nase for his recent “coronary thrombosis.” He was a der-
elict with no family and from whom no permission was ob-
tained. We were to monitor his progress by ECG every few
minutes—I made the electrodes from quarters (silver at the
time). After a few hours the experiment was stopped out of
fear for the patient because of frequent ventricular prema-
ture beats. No one had ever seen anyone’s continuous ECG.

While we generally loved the work and were enthusias-
tic and optimistic, interns were on call on alternate nights
and residents every third. We complained about the amount
of scut work — interns or medical students did complete
blood cell counts and urine analyses and were the patient
transport system much of the time. Bellevue Hospital, where
I trained, was grossly understaffed and in poor condition.
House staff made up for many of the deficiencies. With few
exceptions, the patients were on 30-bed wards that were full
in the beginning of my training but less so by 1958 as hos-
pital insurance began to have an impact. Despite the pay ($25
per month for an intern), the amount of work, and the poor
physical environment, morale was usually high. We thought
of ourselves as the defenders of the poor against “the sys-
tem,” although that phrase had not yet been coined.

Was my training different from residency training to-
day? Superficially, absolutely yes. Fundamentally, cer-
tainly not. Think what the intervening 40 years have brought.
The current economic conditions may spring to mind —
more physicians, diminishing financial rewards, and the
chaotic flux associated with managed care. Or consider the
fantastic explosion of medical science, technology, and therape-
uttic power — for all of which it is difficult to find suffi-
cient hyperbole. Hospitals are better, residents' salaries are
higher, and the climate of training has changed. But train-
ing has not basically changed.

There were 3 fundamental assumptions on which our
training in 1954 was based. First, if someone is ill, it was
assumed that their disease adequately explained the ill-
ness. The second assumption was that the same disease in
different persons produces the same illness — it is the dis-
ease that counts. The third assumption was that to know
the science of disease is to know diagnosis and treatment
and to know medical science is to know medicine. Substi-
tute the word pathophysiology for disease and these same
assumptions underlie current training programs. This is a
pity, because they are palpably false in today’s world.

These assumptions have been invalidated by 2 enor-
mous changes occurring over the last 40 years. Residents
are still being trained by caring for patients with acute dis-
ease or acute episodes of disease, but medical practice has
changed. The disease burden is overwhelmingly due to
chronic disease, in which the patient's personal character-
istics along with pertinent social, cultural, economic, and
even political factors can be as important in determining
illness occurrence and how patients are managed as the
illness itself. Further, the prevention and management of
disability is key in the care of those with chronic illnesses,
more so than saving lives. The second major change is that
patients have been moved to the center of medicine and the
relative roles of physicians and patients have altered.1

Are residents being trained to focus on the sick or well
person rather than the disease in the manner demanded by
changes occurring over these past 40 years? Are the skills
necessary for physicians to be for their patients a profes-
sional teacher, motivator, psychological counselor, and re-
liable confidant as much a part of their training as medical
science? If not, residents are probably being trained for the
medicine of a generation past.

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