

24. J. C. Garriott and W. Q. Sturmer, *N. Engl. J. Med.* **289**, 1276 (1973).
25. S. Felby, H. Christensen, A. Lund, *Forensic Sci.* **3**, 77 (1974).
26. A. J. McBay, *Clin. Chem. (Winston-Salem, N.C.)* **19**, 361 (1973).
27. J. D. Sapira, *Am. J. Med.* **45**, 555 (1968).
28. G. N. Christopoulos and E. R. Kirch, *J. Chromatogr.* **65**, 507 (1972).
29. M. Alexander, *J. Am. Med. Assoc.* **229**, 677 (1974).
30. D. B. Louria, T. Hensle, J. Rose, *Ann. Intern. Med.* **67**, 1 (1967).
31. F. J. Manning and L. H. Ingraham, *Int. J. Addict.* **18**, 89 (1983).
32. F. J. Manning *et al.*, *ibid.*, p. 153.
33. Centers for Disease Control, *Morb. Mortal. Wkly. Rep.* **32**, 321 (1983).
34. R. W. Richter, J. Pearson, B. Bruun, *Bull. N.Y. Acad. Med.* **49**, 3 (1973).
35. American Medical Association, *AMA Drug Evaluations* (Wiley, New York, ed. 4, 1980), p. 1390.
36. L. H. Levine, C. S. Hiroch, L. W. White, *J. Forensic Sci.* **18**, 167 (1973).
37. L. Kazyak, in *Methodology for Analytical Toxicology*, I. Sunshine, Ed. (Chemical Rubber Co. Press, Cleveland, 1975), p. 339.
38. K. J. Isselbacher, R. D. Adams, E. Brunwald, R. G. Petersdorf, J. D. Wilson, Eds., *Harrison's Principles of Internal Medicine* (McGraw-Hill, New York, ed. 9, 1980), p. A-1.
39. D. H. Abramson, *N.Y. State J. Med.* **72**, 2888 (1972).
40. R. D. Pickett, *Br. J. Pharmacol.* **40**, 145 (1970).
41. C. L. Winek, E. R. Davis, W. D. Collom, S. P. Shanor, *Clin. Toxicol.* **7**, 129 (1974).
42. P. Lupovich, R. Pilewski, R. Juselius, *J. Am. Med. Assoc.* **212**, 1216 (1970).
43. M. Labi, *Ann. Intern. Med.* **71**, 951 (1969).
44. F. L. Glauser, R. L. Downie, R. W. Smith, *Bull. Narcotics* **29**, 85 (1977).
45. J. Lipaki, B. Stimmel, E. Donoso, *Am. Heart J.* **86**, 663 (1973).
46. D. S. Sandweiss and B. Thomson, *Ariz. Med.* **30**, 265 (1973).
47. K. Singer and W. B. Lundberg, *Ann. Intern. Med.* **77**, 247 (1972).

Who Will Pay for Medical Education in Our Teaching Hospitals?

Arnold S. Relman

In the teaching hospitals of this country, the care of patients has always been intimately associated with clinical education and research. Medical students, house officers, and clinical fellows help take care of patients while they are being supervised and educated by the senior staff, even as the staff carry out clinical research studies. Indeed, it has been an article of faith among medical educators that these three elements—patient care, clinical education, and clinical research—are the essential ingredients of academic medicine—inseparable and mutually supportive (the academic medical “tripod”). Most educators believe that the sophisticated clinical services in the teaching hospitals owe their special quality in no small measure to the educational and research programs. They also believe that the best kind of clinical education takes place at the bedside and in the clinics in the teaching hospitals, under the close supervision of full-time faculty specialists who are also engaged in the care of patients and in clinically related research.

Phase One: Generous Research Grants

With this rationale, and in response to the generally perceived need to increase the number of medical graduates, clinical departments in the teaching hospitals—

particularly departments of medicine—expanded rapidly in the decades following World War II. The initial support for the necessary growth in full-time faculty came largely from National Institutes of Health (NIH) grants, which were ostensibly awarded only for the support of research and research training. Although there was no explicit approval of the use of these funds to support education and patient care, there was no objection either. Generous NIH grants included salaries for faculty members who were mainly supposed to be doing research and training investigators, but there was no problem if they also spent some time teaching students and house officers and making clinical rounds. And, likewise, fellows and trainees were supposed to be spending most of their time in the laboratory, but the fact was that many were also teaching students, seeing patients, and learning how to become clinical specialists. No one really objected because at first there was plenty of NIH money to go around, and also because most of us were convinced that one simply could not be a competent clinical investigator without also seeing patients and doing some teaching.

In those early postwar years, although most schools were eager to increase their full-time faculty, they had no way of supporting them other than through NIH grants. Except in some well-financed

state schools, institutional hard money was available for only a relatively few senior faculty. Income from practice was also limited because there were few or no departmental practice plans, and most patients on teaching services were uninsured.

Thus, it was that departments of medicine in the 1950's and 1960's built their new full-time faculties largely with NIH funding. That was not intended by Congress, nor was it often admitted in public, but deans and department chairmen knew what they were doing, and they rationalized it by talking about “troikas” and “three-legged stools.” The fact was that we really had no other options. In those days, if you wanted to build a department, it was the NIH or nothing.

By 1965–1966, 53 percent of total medical school revenues came from the federal government, most of it in the form of research grants and contracts (1). For a relatively brief period, beginning in 1966, the government provided modest support for education in the form of per capita grants. Originally intended to fund “basic improvements” and to assist schools in financial straits, the grants were soon linked to expansion of class size. By the mid-1970's a gradual phasing-out began, which was completed in 1980, ostensibly because there was no longer any need for expansion of classes.

There never was any explicit federal commitment to the general support of medical education, but in any case, proposals that there ought to be soon faded away as the NIH purse strings began to tighten in the 1970's. With the coming of a new austerity in the NIH budgets also came the need to account for allocations of time and effort more carefully and to concentrate available resources on the support of research rather than education or patient care.

Arnold S. Relman is the editor of *New England Journal of Medicine* and professor of medicine, Harvard Medical School, Boston, Massachusetts 02115. This article is based on the presidential address delivered before the Association of American Physicians, 6 May 1984, Washington, D.C.

Phase Two: Open-Ended

Third Party Payments

By 1970, or even earlier, we began to realize that the federal government was not going to provide nearly as much support of nonresearch activities as had been hoped, and we began to look elsewhere for resources to continue the expansion of full-time faculty and the development of graduate training programs. The answer, of course, was patient care in the teaching hospitals. Medicare and Medicaid had arrived in 1966 and were now paying physicians and hospitals for the care of indigent and elderly patients. Enterprising department chairmen and deans soon began to organize faculty practice plans to capture that potential income for academic purposes. The extraordinary success of that effort can be illustrated best with a few data supplied by the Association of American Medical Colleges (1). In 1965–1966, income from patient care for all U.S. schools was only \$49 million, or 5.6 percent of total revenues and 13 percent of general-purpose (or “unrestricted”) revenues. Sixteen years later, by 1981–1982, those figures had increased to \$2.14 billion, which represented 30 percent of total medical school revenues from all sources and 48 percent of general-purpose revenues. Corrected for inflation, income from patient care had increased 15-fold in 16 years, and was now the largest single source of medical school support. By contrast, federal support over the same period had dropped from 53 percent of total revenues to 28 percent.

There has been an equally spectacular rise in third-party payments to hospitals over the same period. Overall, payments to hospitals have been increasing at a compound rate of 12 to 15 percent per annum, and the teaching hospitals have led that rise. Since many of the specialized services in the teaching hospitals are directly provided or supervised by clinical faculty, it is clear that hospital income and physician income are closely linked.

The teaching hospitals, of course, have always had to charge much more for their services than nonteaching hospitals because they must support the extra costs of house staff and fellows, more advanced equipment and larger technical staffs, a greater burden of free care, and a generally sicker and more complicated mix of patients. These differential costs were no problem at first because the third parties simply reimbursed the teaching centers for their

higher charges. As long as that system prevailed, hospital administrators could be receptive to the requests of clinical chiefs for more house staff and fellowship positions, and more equipment and more salaries for clinical faculty.

For a while, then, we thought we had the answer. The tightening of the NIH budget might have eliminated opportunities for federal funding of education, but we were doing much better through the third-party reimbursement system, which not only generated direct income for departments, but subsidized undergraduate and graduate educational costs in the hospital and even some of the indirect costs of clinical research.

Before, in what I call “Phase one,” we

their services simply to generate the net income they need to support their expensive life-style.

Secondly, any open-ended reimbursement system for health care inevitably prices itself out of existence, and that is what has begun to happen with our present system for hospital payment. The Medicare fund seems headed for bankruptcy, and the private insurers are in serious trouble with their customers because of their high premiums.

To stave off disaster, Medicare is changing to a prospective payment system based on fixed rates for diagnostic groups (DRG's) (2). In all likelihood, other insurance carriers will soon do likewise.

Summary. Although most medical educators believe that education, research, and patient care are inseparable and essential to their academic mission, the educational component of this triad has never been given adequate, earmarked support. To fund educational programs, medical centers first relied on research grants and later on third-party payments intended for patient care. However, research money has long since ceased to be available for other purposes and recent federal cost containment measures have started to reduce payments for patient care. Teaching hospitals are threatened with loss of support not only for education, but for their capital improvements and care of the poor. Many institutions are now hoping to generate new income through business deals with for-profit health care corporations, but this effort probably will also fail and may compromise professional traditions. Teaching hospitals serve the public interest and will have to depend, at least in part, on public subsidy of their unavoidable extra costs.

had temporarily succeeded in using research funds to meet educational and—to some extent—patient care costs that could not otherwise have been supported. Now, in Phase two, we were using an open-ended hospital care reimbursement system to pay for educational and research costs that otherwise would not have been funded. The third-party payers had not explicitly agreed to support education and research in the teaching hospitals, but we privately justified our higher hospital charges by the quality of the tertiary care given to patients in our hospitals and by our conviction that the teaching hospitals were an essential national resource that had to be supported by one means or another. The trouble was that we never argued this publicly and therefore never had the explicit agreement of the payers or the public.

There were other major problems. In the first place, to generate a large practice income for a department of medicine, you have to have a large full-time clinical faculty spending large amounts of time earning money. Academic departments then face the danger of becoming large profit-seeking enterprises, committed to marketing and expanding

Any fixed-rate prospective payment system tends to put hospitals in jeopardy unless they can reduce their costs. The new system puts special pressures on the teaching hospitals because it is based on paying the same basic rate for a given diagnosis to all hospitals in a given region, and therefore it squeezes hardest on the high-cost providers. Under current regulations, there is a separate reimbursement for the direct costs of the house staff program and a special additional payment based on the ratio of house staff to beds, which is supposed to pay for the added costs of the technology and the sicker patients in the teaching hospitals. However, no one can yet be sure that this formula will account for all the legitimate differences in costs, particularly since there is no provision for the costs of indigent patients—a major burden carried by many teaching hospitals.

The End of Phase Two

The dust has yet to settle, but it is already clear that Phase two has run its predictable course. There will be little or no further expansion of graduate training

programs. Instead there will probably be important reductions in some hospitals and in some fields. The separate reimbursement of approved and identifiable house staff and clinical fellowship costs has both positive and negative aspects. It has the advantage of finally establishing a separate budget for graduate education, but it also carries the risk of greater exposure to economic pressures and political manipulation by external forces. One easily foreseeable consequence may be the use of this funding mechanism to force changes in the total number and specialty distribution of approved training slots (3). Depending on how and by whom this were done, it might not necessarily be a bad thing.

Prospective payment of hospitals by the third parties will probably reduce the availability of hospital funds for the payment of hospital-based faculty, for the purchase of new technology, and for the subsidization of complicated high-cost patients or patients of special research or educational interest. Pressures for reducing optional or redundant hospital work-ups and unproven procedures will increase. Even if there is no change in the present fee-for-service reimbursement of physicians, departmental income from hospital practice is bound to fall, and this will be felt by the faculty practice plans. Of course, if new fee schedules are negotiated by the third parties, or if prospective payment for in-hospital physician care is instituted, there may be even larger reductions in practice income.

Perhaps the most serious immediate consequence of the new hospital payment system will be the loss of funding for free care. The teaching hospitals as a whole currently provide nearly one-half of all the charity care in our short-term nonfederal hospitals, although they constitute only 6 percent of these hospitals (4). They have been meeting the costs by cross-subsidy from the charges paid by the third parties, including Medicare. Unless special provisions are made, conversion of all third-party payers to a prospective payment system similar to the present Medicare method will eliminate that cross-subsidy and require that the teaching hospitals either absorb the costs themselves or transfer their indigent cases to the already overburdened and underfunded public hospitals. It is a serious and growing national issue that must be resolved very soon.

I do not want to go into too many of the technical details of hospital finance, but the more one studies the subject, the more one realizes that it is the key to some of the most important policy issues

academic medicine is facing today. I will therefore touch only very briefly on one other critical financial problem confronting our teaching hospitals—that of capital costs. Like many other voluntary hospitals, most teaching hospitals have been unable to accumulate enough reserves from their operations to replace or repair their physical plant. To meet the now astronomical expenses of building and equipping a new plant, teaching hospitals have had to borrow large sums of money and then add the cost of paying principal and interest to their per diem hospital rate, provided that state rate-setting commissions allow those extra charges. For the moment, the new Medicare system allows hospitals to pass through the total costs of any state-approved capital project, but the subject is under review, and new regulations may well put much stricter limitations on Medicare payments for capital costs. This would add yet another special burden on the teaching hospitals, which have to purchase expensive equipment and maintain relatively elaborate physical plants.

In short, all signs point to the closing of Phase two. In the long run, we were not able to fund our clinical education costs through the NIH research budget, and we will not be able to do it through the patient care payments from the third parties. It is also rather uncertain whether the third parties will continue to pay all the other extra costs of teaching hospitals.

What will happen next? How will our academic medical centers find other sources of support for their special needs?

I believe the beginnings of Phase three are already apparent. At a recent meeting of medical school deans, I am told, a speaker asked the audience how many of them had been discussing possible business ventures with for-profit corporations. A large majority of the assembled deans held up their hand.

As of this moment, at least three university hospitals are managed, and one is leased, by an investor-owned hospital corporation. Three or four other schools are believed to be negotiating with such corporations about the sale or lease of their hospitals. One large hospital chain has signed an agreement to build and operate a new psychiatric unit at a university medical center and has made an unsuccessful bid to purchase another psychiatric teaching hospital (5). Of course, we know that many medical schools and a few teaching hospitals already have arrangements with biotechnology companies for the sponsorship of

research projects and special research units. Many faculty members in clinical as well as basic science departments also have arrangements with these companies as consultants or investment partners. But joint ventures involving teaching hospitals and for-profit businesses in the delivery of health care services are an entirely new development. Another, quite different kind of commercialization is the corporate reorganization of a teaching hospital into a nonprofit holding company, which may own various kinds of business enterprises, the profits of which go to the holding company for the sole benefit of the teaching hospital.

In this discussion, I am not referring to either the research arrangements with industry or the corporate reorganizations, but rather to the joint ventures between teaching hospitals and investor-owned corporations which involve the direct delivery of health care services. These, I believe, represent Phase three—an attempt by academic medical institutions to find new sources of support for their clinical education and research programs and, in some cases, to transfer the costs of capital improvements, by striking deals with investor-owned hospital and health care delivery corporations.

This is not the place to expand on this issue, but I believe that Phase three will be relatively short-lived and even less successful than the phases that have preceded it. In my view, the large health care corporations probably could, if encouraged, provide the new capital for the replacement or upgrading of a few teaching hospitals in exchange for leasing arrangements or transfer of ownership, but they are not likely to do this for many hospitals, nor will they be able to provide sustained large-scale support for the ongoing costs of medical education. This brief affair between the teaching hospitals and the “medical-industrial complex” will very likely fail (5), but it contains the possibility of damaging academic institutions that venture too far along this path. It is one thing to make limited arrangements with corporations for specific research purposes, with terms that ensure the intellectual, economic, and administrative independence of the academic institution. It is quite another to merge the operations of teaching hospitals with the business activities of investor-owned corporations. Such arrangements could undermine the basic traditions of the teaching hospitals, which are supposed to have a primary commitment to education, research, and community service. Investor-owned business corporations are primarily con-

cerned with the maximization of profits, an objective not always compatible with the purposes of the teaching hospital.

I believe that responsible leaders of the for-profit health care industry would genuinely like to help the teaching hospitals and the academic medical centers. They should be encouraged to do so through unrestricted gifts and endowments rather than by seeking major financial interests in the operation of academic institutions.

What Next?

My purpose to this point has been to describe and analyze past events and present trends. Fortune-telling is not my forte, and I do not know what is going to happen after we end our romance with the for-profit health care industry. I do know, however, that we are entering a new era of unprecedented change in the social and economic climate surrounding health care in this country. Academic medicine can influence events by the goals it sets for itself and what it does to achieve those goals.

I will therefore conclude this discussion by briefly suggesting a few general guidelines for Phase four.

First, we must assume that public support for biomedical research will remain strong. I think that is a safe assumption, but we should do everything we can to encourage and justify such support. We are fortunate in having strong, intelligent leadership at the NIH. We must make sure that this kind of leadership continues and is not hamstrung by excessive political interference.

We cannot, on the other hand, assume that there will be general public appreciation of, or automatic public support for, the special functions and needs of our teaching hospitals. We should do everything possible to explain to the public what teaching hospitals do, why they are no less crucial to the future of health care than is our biomedical research program,

and why neither the NIH nor our teaching hospitals can function well without the other.

To justify continued special treatment of our teaching hospitals, we will have to do more to ensure that they are efficiently managed. Being not-for-profit does not mean that you cannot be business-like in your management. Clinical faculties will have to help their teaching hospitals become more efficient. With the full cooperation of the staff, teaching hospitals should participate in the rigorous assessment of medical technology. Technology assessment, which leads to the identification of truly cost-effective methods and the abandonment of ineffective and unnecessary procedures, is the only alternative to rationing. We should press for a national program of technology assessment, supported by a levy on the third-party funds used for the payment of health care.

We need to recognize that, in our clinical programs, more is not necessarily better. We have overextended ourselves in many cases, with larger full-time faculties and more ambitious clinical programs than we really need for our primary academic mission. Medical education will be in a better position to press its claim for public support if it is perceived to be more modest in its use of resources and manpower and more focused on its central function. We have in the past received different signals from government, but now it seems clear that if we hope to obtain sustained, specifically earmarked funding for clinical education, we will have to scale down our expectations and concentrate on the essentials. The result may be fewer full-time faculty in clinical practice but more attention to teaching and research.

Academic medicine must also take more responsibility for the planning of medical manpower training. We need to become more involved in decisions about the number of medical students and the number and kinds of approved graduate training programs. If this is

done with the cooperation of government, we may be able to avoid running afoul of antitrust law. What we simply cannot afford is to leave the matter to the ineffective workings of the so-called medical marketplace.

We should join with other interested sectors of American society in insisting on an adequate public response to the health care needs of the poor. This is an urgent and growing national problem that will not be solved by segregating the poor in second-class, underfunded public hospitals. Neither will it be solved by allowing the for-profit, and the not-for-profit nonteaching hospitals to refuse admission of indigent patients or transfer their uninsured patients to the teaching hospitals with the expectation that the latter will absorb the costs. Two baleful results follow from this state of affairs: (i) inadequate or unavailable medical treatment for the poor; and (ii) fiscal disaster for the teaching hospitals. Both could be prevented by an equitable tax-supported insurance program that gave the indigent access to the mainstream of medical care while avoiding the ruinous incentives of an open-ended reimbursement system.

Finally, we should recognize that teaching hospitals are public resources. To enable them to carry out their complex and expensive social obligations, they will have to depend on public support. If they act responsibly, keeping their public service commitments in mind, and if they manage themselves prudently, there is every reason to believe that adequate public support will be forthcoming.

References and Notes

1. The data on medical school funding cited in this article were kindly supplied by Paul Jolly, director, Division of Operational Studies, Association of American Medical Colleges, Washington, D.C.
2. J. K. Iglehart, *N. Engl. J. Med.* **308**, 1428 (1983).
3. M. E. Whitcomb, *ibid.* **310**, 1322 (1984).
4. *A Description of Teaching Hospital Characteristics* (Association of American Medical Colleges, Washington, D.C., 1982), p. 25.
5. B. J. Culliton, *Science* **223**, 909 (1984).
6. A. S. Relman, *N. Engl. J. Med.* **303**, 963 (1980).