Medical Centers of Excellence and Health Reform

Michael E. DeBakey

The recent almost frenetic and sometimes chaotic furor over health care reform has generally overlooked the crucial importance and considerable contributions of the nation's medical centers of excellence for the improved health and longevity of our society. This oversight threatens the stability and integrity of these institutions of research, education, and health care. The result will be a standstill in new medical knowledge, inadequate training of health professionals, and ultimately, and most important, a decline in the overall quality of health care.

The medical centers represent a symbiosis of research, education, and practice, where new concepts germinate, are explored, and are then fully tested. Physicians and scientists with inquiring minds and an investigative bent naturally gravitate to academia, where the environment is hospitable to fertile ideas and where cross-fertilization thrives. Any proposal for health reform that shunts funds from these medical centers to less advanced hospitals or other less productive facilities will necessarily jeopardize new medical knowledge; curtail future advances in diagnosis, prevention, and treatment; and ultimately diminish the general quality of health care delivery. On the other hand, a steady investment in medical research will continue to yield the remarkable achievements of this creative enterprise, which has already eliminated many serious infections, designed artificial limbs, and devised transplantation of organs.

Few reports in the history of science have had the dynamic and impressive consequences of that issued by President Franklin Roosevelt's science adviser, Vannevar Bush, in July 1945, recommending bold new policies for federal support of health research in our educational institutions. In *Science: The Endless Frontier*, Bush wrote (*1*):

> Progress in the war against disease depends upon a flow of new scientific knowledge. New products, new industries, and more jobs require continuous additions to knowledge of the laws of nature, and the application of that knowledge to practical purposes. . . . This essential, new knowledge can be obtained only through basic scientific research. . . . [W]ithout scientific progress no amount of achievement in other directions can insure our health, prosperity, and security as a nation in the modern world.

The author is Chancellor at Baylor College of Medicine, Houston, TX 77030.

Fortunately, leaders in science and education, and especially certain congressional leaders in health endeavors, eagerly seized upon his proposals to accelerate the funding programs of the National Institutes of Health (NIH). Shortly afterward, the medical center concept, which had evolved and been used so effectively in World War II, was being developed for specialized fields such as heart disease, cancer, stroke, infectious diseases, and other serious human ailments.

Although I first proposed to Congress in 1959 the nationwide establishment of such specialized medical centers of excellence, their implementation was retarded somewhat by the limited funding. Considerable impetus toward their more widespread adoption ensued from the report of President Johnson's Commission on Heart Disease, Cancer and Stroke (*2*). Since then, the center concept has become well established and has been strongly supported by funds from both private sources and the NIH. These centers of excellence and medical complexes comprise university medical schools, their affiliated teaching hospitals, and other related health and research institutions (*3*). In the words of Bush, "They are the wellsprings of knowledge and understanding" (*1*). They have provided not only a continuous flow of well-educated and well-trained medical personnel but also an accelerated yield of new medical scientific knowledge propelling American medicine into world leadership.

With the impetus for medical research provided by the NIH, medical science moved forward with uncommon force. Genetic secrets were uncovered, immunology was redefined, neural chemistry was being investigated, enzymes affecting blood pressure were being identified, new viruses were discovered, new vaccines were developed, cancer therapy was vastly improved, artificial parts and organ transplantations were perfected. The meteoric nature of the spectacular medical discoveries after Americans began investing significantly in biomedical research was unprecedented. With the generous federal support that followed World War II, the United States assumed worldwide leadership in medical research, previously the province of the venerable European universities. The infusion of funds and interest was well rewarded. At midcentury Watson and Crick proposed the double helix theory of the DNA molecule, and the synthesis of RNA and DNA soon followed, leading to the progressive expansion and intensification of research in molecular medicine, with potential therapeutic application of great magnitude.

Periodic bursts in medical knowledge have always been tied to the intensity of attention and support for research. The explosion of new medical knowledge during the past three of four decades, emanating largely from the research in the medical centers of excellence, has achieved prodigious progress in controlling many disabling and even fatal diseases, such as diphtheria, tetanus, pertussis, poliomyelitis, and other infectious diseases; in significantly improving survival rates for heart disease, cancer, stroke, and diabetes; and in devising life-saving techniques such as the heart-lung machine, arterial substitutes for diseased arteries, transplantation of vital organs, diagnostic imaging equipment of extraordinary precision, and highly valuable genetic engineering techniques. The research and development of most scientific innovations, such as the heart-lung machine, sonar, and doppler radar, initially supported at considerable cost by government as well as private funds, became less expensive and thus available for routine use once they were refined and perfected. Among other exciting advances were computed axial tomography scan, positron emission tomography, ultrasound, and magnetic resonance imaging.

It was research in the medical centers that led to the development of arteriography, which allowed the visual demonstration of the arterial occlusive lesions, with their tendency to be reasonably well localized, and provided the basis for corrective surgical procedures, including coronary artery bypass, which proved effective in alleviating angina, improving cardiac function, increasing survival, and restoring work capability. And it was research in the medical centers that led to the development of the Dacron graft for resection and replacement of aneurysm of the aorta, a previously fatal disease that had remained a medical challenge for more than 2000 years. Patients are living today and leading normal lives 20, and sometimes 30, years after removal of their aneurysm and replacement with a Dacron graft.

The advances made by medical research are also reflected in mortality statistics over the past century. Life expectancy rose from 34 years in 1878 to 47 years in 1900, to 67 years in 1953 to 75.7 years in 1991 (*4*, *5*). Infant mortality has declined from 29.7 per 1000 live births in 1950 to 8.9 in 1991 (*5*)—a 70% reduction. From 1963 to 1987, death rates from all causes have fallen by 29.2%, from cardiovascular disease by 45.4%, from coronary artery disease by

48.2%, and from stroke by 60.6% (6).

With these dividends from medical research and education, it is difficult to understand the apparent disregard, if not nescience, of the crucial role played by these medical centers of excellence in the recent commentaries and leaked reports of government studies and in the prolegomena of the spate of proposals concerning health care reform, some from those far removed from the daily realities of health services. This slighting becomes even more incomprehensible in that the research and educational activities of these centers are already threatened by progressive and unrelenting constraints on cost reimbursement and by continued reductions in local, state, and national financial support. The integrated function of these centers has been severely jeopardized, indeed almost ravaged, by the financial constraints imposed by Medicare in its development of diagnosis related groups, prospective payment systems, resource-based relative-value scale, and the additional financial administrative burdens imposed by these and similar regulations on medical personnel, estimated by some authorities to be about 25% of health care expenditures (*7*). Medicare reimbursement now provides only about 70% of the actual cost of the patient's care, and in most states Medicaid provides even less. This matter assumes special significance in light of the results of a recent report of the Association of American Medical Colleges that medical service revenues generated by the clinical practice of the full-time faculty represent 45% of total medical school revenues (*8*). In addition to carrying out most of the research and the advanced education of health professionals, the medical centers provide 50% of uncompensated health care in the United States (*9*).

The efficiency and quality of medical care can be greatly enhanced, with considerable savings, if, as recommended for the regional medical programs (*2*), a large proportion of patients requiring highly specialized and costly diagnostic and therapeutic procedures, such as cardiac catheterization, open-heart surgery, organ transplantation, specialized cancer therapy, and other such procedures, were channeled to the medical centers of excellence instead of being scattered in hospitals with wasteful duplication of equipment and with personnel with inadequate experience to provide the best care. This would, however, require adequate cost reimbursement. Liberalizing patient access to the Veterans Administration hospitals and outpatient clinics, especially those designated Dean's Committee hospitals and thus affiliated with a medical school, would also improve cost-effectiveness if integrated with the regional medical centers of excellence.

Most large cities have hospitals and outpatient clinics whose primary responsibility is to provide medical care to the indigent, for example, Cook County Hospital in Chicago, Los Angeles County Hospital, Bellevue Hospital in New York, Charity Hospital in New Orleans, and Ben Taub and L. B. J. Hospitals in Houston. The quality of care varies somewhat among these institutions, but those with close affiliations with medical schools provide excellent health services. The faculty responsible for the care of the indigent at the Ben Taub Hospital, for example, is also responsible for the care of private patients at The Methodist Hospital and Texas Children's Hospital. Medical emergencies, and especially trauma cases, are treated largely in these institutions. Integrating these former charity hospitals into the regional medical centers of excellence would greatly reduce costs while elevating the quality of service. Here again is application of the regional medical program concept (*2*).

Further attention should also be given to the recent report of the Institute of Medicine Committee of the National Academy of Sciences on improvement of patient record systems through digitization and computerization (computer-based patient records). In addition to the establishment of a health care information infrastructure, with key elements for health care data collection and integration, such a system could ultimately effect considerable billions in savings (*10*).

These medical centers of excellence, which have not only advanced but also set the highest standards of health care, can now ensure the rapid and widespread acceptance and application of these standards through telemedicine. Moreover, the use of such audiovideo links provides a readily available solution to ensuring good medical care to remote areas of the country, a problem that has remained refractory to various other attempted solutions. By means of telemedicine, the centers of excellence can be linked to small clinics in rural areas with only a nurse practitioner or physician's assistant, thus making available all the expertise and clinical resources of the medical centers of excellence to these rural areas.

The extraordinary progress made in medicine and health care during the past half-century is in serious jeopardy today. Especially troubling is the decline in support for medical research over the past decade or so. In 1940, the total national expenditure for medical research was only $45 million, $3 million (7%) of which was from the federal government. Within 25 years, the total national expenditure had risen more than 40-fold to $1.85 billion, 64% of which represented the government's share. During the past 20 years, however, federal support for health research and development, as a percentage of national health care expenditures, has dropped by more than one-half. The United States now expends more than $800 billion annually on health care, but less than 2% of that (about $10 billion) is reinvested in medical research. As a percentage of the gross national product, our expenditures on research and development have been falling until they are now below those of Germany (2.67%) and Japan (3.04%). The current U.S. expenditure is only 1.8%. The number of U.S. patents for drugs and medicine that are being awarded to foreign inventors has also been rising. Funding of approved NIH grant applications has been reduced from more than 30% in the 1980s to below 25% in many categories and even 15% in some categories (*11*). A serious negative effect of the cost-containment hysteria associated with reduction of the budget deficit is the creation of an unstable environment within the research community.

If by "health reform" is meant "improvement," that is a laudable goal. The most effective way to improve health is to gain new medical knowledge, and that requires the expansion and intensification of research. Current knowledge can be used only in a redistribution of access, but that redistribution will not advance diagnosis or treatment beyond the status quo. For this reason, any "health reform" recommendations that do not support continued medical research, education, and training will prove shortsighted and, ultimately, self-defeating. Universal access to health care is of limited value if we do not have the knowledge to treat and prevent diseases with yet unknown cures or effective treatment, such as AIDS and Alzheimer's disease. Sustaining the visibility, indeed enhancing the activities, of the medical complexes and centers of excellence must now be considered an imperative. For if the reduction in support for medical research continues, it will spell the loss of world leadership in medicine and biotechnology that the United States has invested in and enjoyed for the past few decades. But even more serious is the irreparable damage it will do to the pool of researchers, which is already irretrievably shrinking. The loss of promising young medical science investigators is particularly critical because the continued integrity of the nation's medical research enterprise depends largely on the availability of talented researchers, a resource now being depleted. Rebuilding that pool is difficult.

All our spectacular medical advances rest squarely on research. Given the remarkable dividends we receive, it is curious that such strong protection of research is needed against indifference and, even worse, against a minority of zealous, vocal,

and often irrational antiscience activists. Their frenetic activity is designed to arouse the public's hostility toward science. Yet research remains our most potent weapon in solving the many remaining problems in human health, and any neglect of the infrastructure for medical research will inevitably retard the rate of discovery. The effect will impinge negatively on the economy, health, and education of our people (*11*). Again, in the words of Vannevar Bush (*1*)

> [S]ince health, well-being, and security are proper concerns of Government, scientific progress is, and must be, of vital interest to Government. Without scientific progress the national health would deteriorate; without scientific progress we could not hope for improvement in our standard of living or for an increased number of jobs for our citizens; and without scientific progress we could not have maintained our liberties against tyranny.

REFERENCES AND NOTES

1. V. Bush, *Science: The Endless Frontier* (U.S. Government Printing Office, Washington, DC, July 1945).
2. M. E. DeBakey, Chairman, "The President's commission on heart disease, cancer and stroke: A national program to conquer heart disease, cancer and stroke, report to the President," vol. I, part II, chap. 3, p. 29. (U.S. Government Printing Office, Washington, DC, December 1964).
3. M. E. DeBakey, *Cardiovasc. Res. Cent. Bull.* **15**, 5 (1976).
4. "Healthy people 2000: Prevention, federal programs and progress, '91–'92" (U.S. Department of Health and Human Services, Washington, DC, 1992), p. 13.
5. "National Center for Health Statistics Annual Summary of Births, Marriages, Divorces, and Deaths, United States, 1991" (Public Health Service, Hyattsville, MD, 1992).
6. "Morbidity and mortality chartbook on cardiovascular, lung, and blood diseases/1990" (U.S. Department of Health and Human Services, February 1990), p. 17.
7. S. Woolhandler, D. U. Himmelstein, J. P. Lewontin, *N. Engl. J. Med.* **329**, 400 (1993).
8. R. F. Jones, "American medical education. Institutions, programs, and issues" (AAMC Staff Report, November 1992), p. 4.
9. R. J. Bulger, *J. Am. Med. Assoc.* **269**, 2548 (1993).
10. R. Dick and E. Steen, Eds., *The Computer-Based Patient Record: An Essential Technology for Health Care* (National Academy Press, Washington, DC, 1991).
11. J. M. Bishop, M. Kirschner, H. Varmus, *Science* **259**, 444 (1993).

The Political Debate About Health Care: Are We Losing Sight of Quality?

Eleanor Chelimsky

The issue of health care reform appears to be a perennial one, not only in the United States, but also in many other industrialized countries whose citizens thought their problems had been resolved. Its force seems to ebb and flow with the political and economic tides, but today, in the United States, even if some real obstacles to legislative action remain, opinion is aroused in a new way. Indeed, the strong public demand for health care reform—first manifested during the unexpected election of Senator Harris Wofford (D–PA) in 1991, and later during the presidential campaign—has developed into a top political priority.

Over the years, three factors have usually been familiar cornerstones of any American health policy debate (*1*): (i) cost control, (ii) equity of patient access to services, and (iii) the quality of health care delivered to patients. Cost control is the effort to hold down health spending to levels commensurate with our national capability and willingness to pay; equity of access is the ability of all our citizens to obtain (that is, both to pay for and to find available) the health services they need; and quality of care is the appropriateness, timeliness, and outcomes of those health services, once delivered and received.

Recently, however, a perplexing shift has occurred in the sense that, although the factors of cost and access continue to be vigorously invoked, little is being written or said about the need to maintain and to improve the quality of our health services. Table 1 shows a media reflection of current emphases.

This neglect is surprising because the quality of health care services has such obvious functional importance: it is nothing less than the primary goal of providing those services in the first place; it affects both cost and access and in turn is affected by them; and it is produced, at its most basic level, through the doctor-patient relationship that forms the heart of Western health care systems. Given so integral a function, then, it would seem that any major health policy that did not recognize the importance of quality and its sensitivity to changes elsewhere in the health system could be expected to encounter serious questions about its validity.

Beyond validity, however, the quality of health care is a political issue because everyone, at some point in time, is a patient. Because an important part of the public will thus have experienced the system's quality firsthand, it is likely that the success of any health care reform will be politically evaluated at least as much in terms of how good its services are, as what it costs or who it includes. This has always been the case in the past, and results of a recent study examining patient satisfaction with health services by Johns Hopkins University suggest that it is still the case today (*2*).

But what policy difference does it make, then, if quality is dramatically eclipsed by cost and access in the national political debate? I argue that the quasi-invisibility of the issue is of critical importance to policymakers, if only because ignoring it can lead to major misjudgments about the likely effects of changes to be made in other parts of the health system. Given that the three factors of cost, access, and quality are mutually dependent, one of them cannot be importantly modified without affecting the others. Indeed, their interactions are so intimate and numerous that, from a policy viewpoint, they cannot legitimately be separated. Instead, they need to be considered as dynamically interrelated parts of the health care system as a whole.

Changing a health care system is like playing Chinese baseball, which is almost exactly like American baseball except for one (and only one) difference:

> After the ball leaves the pitcher's hand and as long as the ball is in the air, anyone can move any of the bases anywhere. . . . The secret of Chinese baseball, then, is not just keeping your eye on the ball, but on the bases as well (*3*).

In the Chinese baseball of health policy—assuming that the three bases represent quality of care, equity of access and cost control—with almost everything in flux and all systems open, it seems impossible to imagine that quality of care could remain unchanged under a health system that reformed both cost and access.

Table 1. Number of articles in *The New York Times* primarily addressing the factors of medical costs, access to health services, and quality of care (1989 to 1993).

	Cost	Access	Quality
1989	40	9	3
1990	41	11	3
1991	82	21	2
1992	59	15	2
1993*	79	2	1

*Through July.

The author is Assistant Comptroller General for Program Evaluation and Methodology, U.S. General Accounting Office, Washington, DC. The views and opinions expressed by the author are her own and should not be construed to be the policy or position of the General Accounting Office.