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ABSTRACT

The unusually high rate of inflation has produced a clear demand for more vigorous government action to lower the rate of price increase, including increases for health professional schools. The concern coincides with Congressional debate surrounding the renewal of the entire structure of federal support for the education of physicians, dentists, optometrists, and others. Two issues are addressed: (1) what has been the impact of inflation on the costs of health professional education, and (2) how will schools meet the growing burden? A brief overview is presented of both the structure of school costs and estimates of how they have been changing. Attention is paid not only to what has been happening but also to what is likely to occur. These estimates are balanced by a discussion of what has been and is likely to be the school response to cost pressures. Methods of cutting costs as well as increasing revenues are examined. The discussion offers a background for analyzing the impact on school financing of anti-inflationary policies; i.e., a tight monetary policy and expenditure reducing fiscal policy which includes cuts in federal support. Emphasis throughout the paper is on medical and dental schools. (LBH)

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INFLATION:

ITS IMPACT ON MEDICAL TRAINING PROGRAMS

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I. Introduction

The unusually high rate of inflation has produced a clear demand for more vigorous government action to lower the rate of price increase. Inflation therefore becomes an issue for health professional schools not only because of the direct impact on their costs and revenues but because of the potential impact of government anti-inflationary policy. This concern is made all the more immediate since it coincides with Congressional debate surrounding the renewal of the entire structure of federal support for the education of physicians, dentists, optometrists, and all other health professions. Given this coincidence of national debate over spiraling prices and new directions for health manpower policy the obvious question becomes, what is the impact of the current inflation on financing the education not only of future physicians, but of all other manpower delivering health care?

This question divides into two key issues. First, what has been the impact of inflation on the costs of health professional education? Second, how will the schools meet this growing burden? With regard to the impact of inflation, a brief overview will be presented of both the structure of school costs and estimates of how these costs have been changing. Attention is paid not only to what has been happening but also to what is likely to occur. These estimates are balanced by a discussion of what has been and is likely to be the school response to cost pressures. The paper will review methods of cutting costs as well as increasing revenues. Is the structure of school funding adequate to meet growing costs? Will the relative role of sources of revenue have to change? This discussion will provide a background for analyzing the impact on school financing of anti-inflationary policies, e.g., a tight monetary policy and expenditure-reducing fiscal policy which includes cuts in federal support.

Throughout this paper most of the detailed discussion is in terms of medical and dental schools. Although further research on the other professions may reveal significant deviations from the patterns here discussed, many of the generalizations and conclusions hold for the broad spectrum of institutions offering training in the health professions.

II. The Impact of Inflation on the Cost of Education

What has been happening to the costs of educating health professionals? Have they been growing faster or slower than overall inflation as indicated by the Consumer Price Index (CPI)? The key to understanding the movement of these costs is an analysis of their component elements.

Recently, the Institute of Medicine (IOM) released the results of its massive study, The Costs of Education in the Health Professions.[1] The IOM study focused upon the cost of eight different professional programs: medicine, osteopathy, dentistry, optometry, pharmacy, podiatry, veterinary medicine and nursing. As summarized in Table 1, the IOM study found that the annual per student cost of education varies greatly, both across the professions and between the individual schools of the particular professions. Not unexpectedly, medical education was found, on the average, to be the most expensive of the training programs, but the high cost was often matched by individual schools in dentistry, osteopathy and veterinary medicine.

Under the methodology of the IOM study, costs were separated into three categories: direct instruction costs, research costs associated with education, and patient care costs associated with education. Instruction costs are clearly dominant. In particular, programs in nursing, optometry, podiatry and dentistry rely upon large amounts of direct instructional input. Relative to other health professional schools, schools of medicine place the greatest

emphasis upon research and patient care inputs; yet instruction costs still represent over 60 percent of their estimated total education costs. Within these instructional as well as research and patient care costs, faculty salaries are the dominant component. On the average medical schools devote a greater proportion of their budgets to faculty salaries than other schools with the exception of nursing programs. The range of impact faculty salaries have on education costs is again particularly dramatic in medical schools. Moreover, Table 1 takes into account only the actual cost of education for specific occupations. If entire operating budgets are taken into account, the dominance of faculty costs may increase. For example, according to the American Dental Association fully 50 percent of the operating budgets of schools of dentistry are devoted to faculty salaries.[2]

In this regard it is important to note that the broad variation in costs is not primarily due to significant inter-school disparities in salary levels. Salary surveys such as summarized in Table 2 evidence very little variation in average salaries. Indeed, the IOM study found that differences in average faculty compensation accounted for less than 20 percent of the range in faculty costs of medical education. The major determinants of the large variations in per-student costs were differences in faculty-student ratios and assorted support personnel.[3] The existence of apparently standard salary scales has important implications for the ability of individual schools to deal with overall cost inflation. For education as a whole the behavior of both salary and hiring levels will e changes in per student costs.

Given this structur costs, how fast has the cost of education increased? The IOM study did not examine the rates of change in the individual cost elements nor did it make projections. Table 3 presents data on the growth of salaries for strict full-time faculty in medical schools for the academic

years 1963-64 to 1973-74. For the first half of the decade, salaries apparently rose at a rapid pace providing sustained increases in real income. More recently, however, the rate of growth of faculty salaries has slowed appreciably. Given the accelerating growth of the Consumers Price Index, average faculty salaries have not kept up with inflation. Does the same pattern hold for other health professions? it is, unfortunately, difficult to determine accurately how typical the movement of medical faculty salaries actually is. The real value of all university faculty salaries is falling. For dentistry, conversations with dental school administrators and the recent salary data summarized in Table 4 both indicate that dental school faculty salaries have increased at a rate similar to that of medical school faculties.

The growth of faculty costs, however, is determined not only by average salary but also by the total number employed. Although the rate of increase in faculty salaries has not been anywhere near that which occurred in the past, medical schools do not appear to have a problem in attracting full-time faculty. According to Table 5, full-time faculty in medical schools have expanded even more rapidly than the increase in student enrollment. The consequence of full-time faculty growing at a rate which is 50 percent greater than the increase in student enrollment in 1972-73 has been to decrease the already low student-faculty ratio. Only for the most recent year, 1973-74, has there been an indication that the employment of faculty has slowed down.

The rise in medical education costs as a result of inflation has therefore been relatively small in the periods for which we have data. Indeed, part of the rise in medical education costs is apparently due not to inflation but to a change in the education process, i.e., a lower student-faculty ratio. However, the fact that faculty salaries have, in the recent past, increased at a slower rate than the overall rate of inflation should provide scant justifi-

cation for complacency since the low rate of faculty salary increase represents a suppressed inflation. One cannot continue indefinitely the present situation whereby the constant dollar value of full-time faculty salaries is apparently falling. The simple requirements that fringe benefits keep pace with inflation will put pressure on payrolls. Moreover, the salary stagnation is occurring at the same time overall physician income is accelerating. Between 1967 and 1971, physician income was increasing at more than 11 percent a year.[4] This rate of increase subsequently slowed due to the freeze on fee schedules, but with the demise of Phase IV price and wage controls, physician fees have been rebounding at an annual rate of 18.5 percent.[5]

Since medical schools must compete directly with private practice for high quality faculty, it is difficult to see how substantial salary increases can long be avoided. The same argument probably holds for other schools in the health professions. As a result, these schools can look forward to much higher cost increases than experienced in the recent past.

III. School Reactions to Inflation

Given the high probability that all schools in the health professions will face increasing new cost pressures in the future, how can they respond? What are their options? On the simplest level schools can move in two directions: cut costs or increase revenues. We will, therefore, first review methods by which schools are potentially able to cut their expenditures and then examine alternative sources of increased revenues.

A. Reducing Expenditures

If, in the face of increasing cost pressure, health professional schools are denied increased government support or are confronted with a cut in federal capitation and are unable to locate alternative sources of revenue, there

are four distinct ways in which schools could react: increase productivity, change faculty composition, eliminate programs, or reduce student enrollments.

In discussing these options we are not necessarily suggesting that one is preferable to the other. The goal is to lay out the range of behavioral reactions to a requirement that expenditures be cut back.

1. Increase Productivity

The first possibility is to change the manner by which students are educated. In this regard both schools of medicine and dentistry, for example, have extraordinarily low student-faculty ratios (see Table 5). Reducing faculty and raising class size would increase productivity and hence decrease average cost per student. Conversations with administrators of medical and dental schools suggest that this change is occurring in some curriculum areas in some schools. The data in Table 5, however, suggest that we are far from seeing many dramatic changes in this direction. Following the trend of the 1960s, the number of full-time faculty have continued to increase rapidly, and, as a result, student-faculty ratios have continued to fall.[6]

In 1972-73, for example, both medical and dental faculties grew well over 50 percent faster than student enrollments. The most recent data for 1974, however, show a reversal of this trend for medical schools. The sharp decline in the growth of full-time faculty to only 2.5 percent per year confirms the comments of the school administrators. Whether this recent behavior will establish a new pattern for medical schools or spread to the other professions clearly remains an open question. A sudden reversal of long-term trends requires a speed of adjustment atypical of educational institutions.

There is, moreover, a hidden cost in a policy of increasing faculty productivity. As suggested earlier, medical and dental schools, in parti-

cular, must compete for faculty with the considerable lures of private practice. In exchange for lower income, a faculty appointment brings numerous advantages, such as additional prestige, access to research funds, and a less hectic schedule. Increases in class size and numbers of preparations obviously undermine these non-monetary benefits. If the teaching load is in fact significantly increased, salaries might have to be raised even further in order to retain a high quality faculty. Pressures to increase salaries would hit financially distraught schools especially hard and threaten the quality of their education programs. They not only stand to lose their better faculty but there is also a high probability that most schools in financial distress have been in relative difficulty for a period of time and have already held down faculty salaries and increased teaching responsibilities. For example, out of 14 medical schools listed in financial distress in 1970, all but four used significantly fewer full-time faculty per student than the national average.[7] Such limitations on the use of faculty often become increasingly difficult as budget cutting moves closer to the core curriculum.

On a broader level, a growing number of experiments are underway which seek to increase the productivity of the entire educational process. One approach is to reduce costs as well as expand the realism of clinical education by moving medical education outside the confines of medical school walls and into the community hospital. Both Indiana and Illinois, for example, have developed a system of satellite programs which use several scattered hospitals for the two years of clinical education.[8] California has experimented with providing the two years of basic science in existing university science departments.[9] Michigan has introduced a full four-year program which is taught completely in a rural area over 200 miles from the medical

school.[10] On a simpler level, productivity can also be improved by the increased use of teaching aids such as computer simulation and indivIdualized instruction through audio-visual aids.

Such innovations, however, do not provide an immediate answer to the pressures of a budget squeeze. They are obviously long-term alternatives to the present structure of education. More important, the financial savings realized concern primarily the capital costs of constructing new medical school facilities. While buildings are enormously expensive, their cost is spread out over so many generations of students that they form only a small fraction of the annual average cost of education. Unless there is a change in the professional component of education, we cannot expect any dramatic changes in cost.

2. Change Faculty Composition

A closely related possibility for cutting school expenditures is to decrease the use of full-time salaried faculty. Faculties in most health profession schools are divided into three major categories along the lines used by medical schools: part-time, geographic full-time, and strict full-time. Geographic full-time refers to faculty members who are allowed to have a private practice. The hours devoted to patient care and/or the income derived from the practice are sometimes monitored and are usually negotiated between each professor and the dean. A strict full-time instructor will deliver patient care in the school-related clinical facility, but his or her salary remains fixed. If the school can no longer support salary increases that are competitive with outside practice, there is the option of moving away from strict full-time faculty status to that of geographic full-time, then salaried part-time, and finally volunteer part-time instructional staff. In some dental schools, for example, a "full-time"

professor may spend as little as three days a week on campus.

Table 6 appears to indicate, however, that neither medical nor dental education has shown much movement in the direction of changing faculty composition. For both, the relative reliance on part-time and essentially volunteer instructors in clinical courses has declined continuously, although their average number of hours appears to be increasing somewhat in dental schools. Certainly there is little evidence of any systematic shift away from standard strict full-time faculty to geographic faculty who draw significant income from the practice of medicine. Indeed, if schools are going to attempt to meet growing per-student costs of education by shifting the composition of their faculties, they must completely reverse the historical trend toward both more and more faculty per student and increasing reliance on a full-time salaried teaching staff.

This option does, moreover, carry a cost. Reliance on a faculty composed of a large number of professionals primarily devoted to private practice carries the risk of poor quality instruction. Continuity and commitment is difficult to ensure; high competency and teaching ability are complex to monitor. Many financially distressed schools have already moved to heavy dependence on a paid and volunteer part-time faculty. For these institutions, there is a limited scope for further cost-savings.

3. Elimination of Programs

The most obvious method of reducing expenditures would be to sharply curtail or eliminate entirely activities which are deemed tangential to an institution's primary educational function.

According to medical school administrators, an important criterion for determining which programs will be eliminated is the contribution these programs make to the medical schools' net revenues. Programs which do not carry

their own funding and must be subsidized by other revenues are likely to be dropped.[11] This is particularly true if the program is new and does not have a solid base of political support within the school or the university.

Below are examples of programs which are likely to be cut back or eliminated based on the above criterion:

a. Plans for expansion of enrollments are not likely to continue unless additional expenses are completely covered by external sources of finance.

b. Health service programs in rural and inner-city areas, which are not self-financing, will probably be curtailed or eliminated.

c. Allied health manpower training programs will be difficult to continue if they are not fully funded and constitute a budget drain.

d. Experimental or innovative curriculum changes, which usually require new faculty and some shift in facilities and equipment, will probably be postponed. In their study of the financing of medical education, Fein and Weber have pointed out that the structure of school budgets and sources of funding continually force deans of medical schools to seek support for new programs from new revenues. Innovations are seldom financed by reductions in the resources flowing to established departments and activities.[12]

e. Increased enrollments of minority and rural students are not likely to continue unless additional expenses are completely covered by external sources of finance.

f. In addition to these separate programs, large university medical schools traditionally have offered instruction, particularly in the basic sciences, to students from other departments. Conversations with medical school administrators suggest that if the medical school is not compensated directly for the instruction given to pharmacy and nursing students, for example, it would seek to eliminate these services and cut back on faculty.

A myriad of influences determine the pattern of budget cuts adopted by any one school. The primary factors, however, are departmental and university politics as well as the fact that schools, particularly when placed under financial pressure, tend to follow the flow of funding. In more blunt terminology, they produce what they are paid to produce. The challenge here for public policy is that the schools' criteria for program elimination may be far different from society's. Internal politics and funding mechanisms may simply fail to reflect social priorities.

4. Reduce Student Enrollment

A final method of reducing expenditures is closely related to the possibilities for cutting back programs. We have previously noted that schools under severe cost pressures will have to reduce their faculty costs in order to achieve noticeable cost savings. In addition to increasing faculty productivity, schools can adjust to a faculty cutback by reducing student enrollment. At first glance this appears to be a rather paradoxical response. Each student does, after all, bring in tuition revenue. For some private medical and dental schools where annual tuitions now approach $4,000, the student pays well over half the cost of instruction. Even though, on the average, tuition may not cover the full cost of education, as long as it contributes more than the marginal cost of educating additional students the school would appear to be better off retaining its enrollment rather than reducing it. Moreover, it is generally believed that every school can substantially raise its tuition and still attract qualified students. If this is in fact true and the savings realized by eliminating a student place is less than the tuition and capitation a student could bring in, why would the school not raise tuition? Why, instead, would it reduce student enrollment in the belief that the financial situation would be improved?

For a large majority of health profession schools which are units within a university, the individual school never receives tuition revenues. Tuition goes into a central university pool from which a college of medicine receives an allocation unrelated to its student enrollment. It is more likely to be related to its need, to availability of funds, and to political pressures within the university. Thus, in the short-run at least, a medical school can achieve considerable cost savings by cutting back on faculty and on the number of its students. Since a medical school's operating revenue is often paid out of pooled funds, a cutback in students does not necessarily translate into a one-for-one cut in allocations from the university. Under these circumstances, it is in the financial interest of the medical school to decrease enrollments.

As suggested earlier, in the face of a severe budget squeeze, schools will increasingly tend to produce only what they are directly paid to produce.

B. Increasing Revenue

It is difficult to escape the conclusion that responding to inflationary pressures by curtailing expenditures will prove to be a painful process for many schools in the health professions. Effective measures to provide more cost-efficient methods of instruction tend to be long-term, and the short-term options of program and enrollment curtailment may prove socially undesirable. Clearly the alternative of responding to inflationary costs by locating new sources of revenue is a more desirable option, particularly from the school's point of view. Given the very real possibility of upcoming rapid increases in costs, what potential sources of increased revenue exist?

Medical training programs, particularly those in medical and dental schools, are currently financed by a host of revenue sources which fall under

six basic categories:

1. Research grants and contracts
2. Reimbursement for patient care
3. Alumni, philanthropic support, and endowments
4. State budget support
5. Federal H.P.E.A. grants and student loans
6. Student tuition and fees.

The extent to which each of these sources finances medical training programs varies greatly. Not only is there a difference between type of training program, e.g., medical and optometry, but also within the same type of schools, e.g., public and private medical and dental schools. Table 7 gives only a partial picture of the structure of school finance but nevertheless offers enormous variation in the sources of revenue between and among training programs for the health professions. Dependence of the entire school budget on sponsored research, for example, varies from 35 and 28 percent of revenues for veterinary and medical schools to 7 and 1 percent for schools of pharmacy and nursing. Yet the range of variation within each school category often exceeds differences between school types. For example, schools of pharmacy as a group make relatively little use of research funding; yet one pharmacy school collects over one-third of its resources from sponsored research. Clearly, changes in one particular source of support will have a widely disparite impact on individual schools. Moreover, the current structure of support indicates the plausibility of different sources as potential remedies to financial distress. Few schools of optometry and podiatry receive any significant state support. A recommendation to meet cost inflation with increased state and local funding therefore requires a dramatic shift in current policy--an option devoid of much realism. In this regard, Table 8

offers some indication of the recent changes over time in sources of support for medical and dental education.

Given this structure of finance, what is the potential for each of the six basic sources of support?

1. Research grants

Medical research has remained an important ingredient of medical (and to a lesser extent dental) schools' source of funds. The Institute of Medicine's studies on the costs of medical education conclude that not only is research an important element of the cost of education, it also underwrites 16 percent of average medical and 8 percent of average dental costs per student.[13] Two points stand out with regard to the ability of schools to finance projected increases in the costs of education. First, federal research grants are highly concentrated in a few favored institutions. Moreover, the degree of concentration is increasing. Between FY 1967 and FY 1972 the percentage of H.E.W.-N.I.H. research obligations going to the top ten medical schools increased from 27 percent to 31 percent.[14] The same phenomenon occurs among dental schools. Moreover, few schools in the other health professions have the ability to attract proportionately as much research funding as schools of medicine (see Tables 7 and 8).

A second and even more important consideration is that research funding has not been growing as rapidly as it has in the past. During the 1950s and early 1960s, there was an enormous increase in federally sponsored research. Between 1967 and 1970, however, sponsored research funds leveled off, and their value in constant prices fell. In 1971 and 1972 sponsored research increased again, but given present federal budget pressures, it appears that N.I.H. support will not increase significantly in the near future. We must conclude, therefore, that while research funds remain an important source

of finance, they offer little hope of being able to offset per-student cost increases. In fact, to the extent that research funds have subsidized educational costs, any decrease in real research dollars will have to be made up elsewhere in the educational budget.

2. Increase Patient Care Revenues

A second source of budget support open to many health profession schools is to offset inflationary pressures with an increase in patient care revenues. Many schools maintain clinics or close ties with hospitals and deliver health care as an adjunct to education. There are two possibilities here. The first is to increase the amount of clinical training incorporated into the education program and increase involvement in health care. Some dental schools, for example, could respond to increases in costs or decreases in federal funding by expanding the practice time of their students in public clinics. In this regard, individual schools apparently can increase the proportion of their revenue flowing from patient care. The data presented by the Institute of Medicine's study suggest that schools do tend to substitute patient care revenues for state support. Private schools exceed public schools in both the average amount per student and the proportion of education costs covered by patient care revenues.

Yet for most schools the potential for increasing patient care revenues does not exist because the direct education of medical and dental students is a joint product. Students are, of course, not sophisticated health practitioners, and in the case of medical schools, assignment to clerkships and other clinical experience often requires considerable reimbursement of the teaching hospital. The ability of the medical school to generate patient care revenues therefore stems primarily from the status of the faculty as both instructor and health practitioner. Indeed, average full-time faculty members apparently

spend one-third of their time in actual clinical practice.[16] The option is therefore open to many schools either to allow their full-time faculty to spend more time in private practice (thereby decreasing the amount the school has to pay the faculty) or to insist that faculty time spent in actual patient treatment be reimbursed to the school at full value. In short, schools may seek to eliminate any unnecessary subsidy of patients by the educational process. For example, the low fees in some dental school clinics can be reimbursed at full value. In this regard, the growth of medical service plans among schools of medicine is an attempt to eliminate subsidies. Strict full-time faculty may remain on a fixed salary, but any excess in the value of patient care delivered would be retrieved by the medical school instead of by the hospital, as in more traditional arrangements.

There are perhaps three major limitations on the ability of health profession schools to finance their operations through increased patient care. First, while rapid growth has occurred in this area, there is a limit to how much care can be delivered in conjunction with education. Reimbursement for patient care services amounts to less than 10 percent of total revenues in both medical and dental schools. Given this small role, even large increases in patient care revenue have a limited ability to replace large cost increases or losses in government support.

A second constraint on the ability of medical schools to increase patient care income is the limited demand for the medical care delivered by school facilities. Although occupation rates are falling for most hospitals, they are falling particularly rapidly in teaching hospitals. A recent review of the problems and challenges facing medical education has suggested several reasons for the comparatively rapid decline in the number of patients referred to teaching centers.[17] First, many teaching hospitals are in

unattractive inner-city neighbornoods. Moreover, major university teaching hospitals are encumbered with inadequate communications between faculty and practicing physicians, which makes referral of patients difficult. Finally, the rapid rise in the number of specialists and the general availability of sophisticated equipment allows outlying community hospitals to compete effectively with university medical centers even in more complex tertiary care. As a result, if schools wish to substantially increase their patient care revenue, many may have to alter their clinical focus toward primary and secondary care. One can argue that such a shift in and of itself is desirable. Yet from the point of view of the financing of education, such a shift will probably not occur suddenly.

A third limitation is the great variation in dependence on patient care revenues among the different health professional schools. According to Table 9, the percentage of the cost of education (as distinct from total school expenditures), which is self-financing through patient care revenues, ranges from only 1 percent for pharmacy schools to almost 25 percent for optometry and 54 percent for Diploma programs for nursing education. Not only do large differences exist among the health professions, there are also large variations between schools within each profession. In medicine, for example, the percentage of the costs of education covered by patient care varies from over 35 percent to absolute zero. The conclusion is clear: if health professional education institutions are to replace lost capitation support with patient care revenues, some schools will have a much harder time raising additional funds from these sources than others. This option, therefore, would be highly uneven in its impact.

3. Gifts and Endowments

This third source of revenue is an even more unlikely prospect for

meeting sharply increased costs. As Tables 7 and 8 indicate, gifts and endowments represent an insubstantial and proportionately falling source of revenue for most health profession schools. In the recent past, increases in philanthropy have not kept up with other sources of revenue, and philanthropy now contributes less than 3 percent to medical school budgets. Proposed changes in tax laws and the recent long slide in stock prices, as well as the considerable uncertainty regarding future trends in financial markets, do not augur well for any foreseeable large increases in voluntary support. Indeed, some schools must face the prospect of even greater decreases in this category of revenue.

4. State Budget Support

From the point of view of health profession schools, the quickest and easiest source of increased revenues to meet inflating costs of education is increased government support. In this regard, current public policy debate on school financing has centered on the Federal Health Professional Education Assistance programs (H.P.E.A.), particularly on the role of capitation. Forgotten almost entirely is the fact that states have traditionally contributed heavily to school support, and indeed, that state and local funding has recently been increasing faster than non-research federal budget support. As a result, state and local governments currently contribute more than federal sources for both new medical school construction and non-research operating expenses. For the academic year 1972-73, state and local governments contributed $358 million in operating budget support. Federal funding less sponsored research contracts ran to only $341 million. In the same year, of the $657 million worth of medical school construction, 21 percent was federally funded and 35 percent financed with state support.[18] As indicated in Table 8, the growth of state support for dental education is even more

striking.

We should, however, guard against over-optimism on the states' ability to meet the rising costs. First of all, the ability of state and local governments to continue increasing their support at previous rates is in doubt. The recent recession and growing unemployment has had a negative effect on tax revenues while increasing mandatory social welfare payments. Many states are therefore facing an increasing fiscal squeeze, and health profession schools will share the burden of reduced state expenditures. It is important to note that the economic downturn has affected individual states differently so that the severity of a fiscal squeeze and the impact on school support will vary substantially from state to state.

The uneven ability of states to meet school needs cannot be overemphasized. Support for private schools is very spotty and limited. For example, private dental schools enroll one-third of all dental students and yet receive less than 9 percent of state support funds.[19] The pattern for medical schools is even more striking. Private schools of medicine enroll 45 percent of all students but receive less than 7 percent of all state funds.[20] Reliance on state governments to cover accelerating increases in costs will leave most private institutions in a difficult position. Even for public schools, state commitment to their support varies widely and is often a highly political process; and schools in poorer states or those without an essential lobbying presence in state legislatures will not receive the support provided in other states or even that provided for similarly competing schools in the same state. For example, in FY 1971 state governments supported public schools of medicine at an average rate of $10,030 per enrolled student. Yet in a poorer state, such as Mississippi, per-student support fell to $5,670. Moreover, Table 7 indicates that schools in lower prestige professions such as

optometry, podiatry, and nursing have great difficulty attracting significant state support. The ability of states to finance the increasing cost of health profession education at an ever-increasing rate is clearly limited at present and is spread very unevenly among schools and professions.

5. Federal Health Professions Educational Assistance Act.

The unevenness of state support and the inability of legislatures to finance inflating costs in an atmosphere of increasing recessionary pressures are key components in a call for continued, if not increased, federal support. The deficiencies evident in other sources of revenue are, in fact, nothing new and represent the basic conditions which led to the original introduction and subsequent expansion of H.P.E.A. programs.[21]

The panoply of programs for supporting students, school operating budgets, new programs, and capital expansion has been of great financial assistance to schools. Most importantly, these funds have been applied relatively evenly to all schools within each profession. Referring back to the data on the financing of medical schools in Table 8, after the primarily federally financed sponsored research, the second largest source of revenue is federal support for operating budgets. Capitation forms only a portion of this miscellaneous collection of support categories, but as indicated in Table 9, it still constitutes a vital component of educational finance. Although the per-student allocation is relatively even, in some schools of medicine and dentistry capitation now covers up to 30 percent of the gross cost of education.

It is not the purpose of this paper to explore in detail the normative issue of the justification for federal support of health profession education. The question is involved, and analysis has been attempted elsewhere.[22] The key question here is somewhat simpler. Will federal support increase with school costs? Despite the current importance of H.P.E.A. support, it is

doubtful that this set of programs can indeed act as a source of finance with which to meet inflating costs of education. Levels of capitation have remained fixed since 1971. Moreover, current proposals for the extension of the H.P.E.A. legislation rather than providing for significant increases in the levels of support concentrate on "payback" provisions, which in themselves may raise the cost of education.[23] Indeed, a continued policy of fiscal restraint in the face of inflationary pressures makes the H.P.E.A. program a target for budget cuts. If federal support is effectively cut in the face of rising costs, schools will have little choice but to respond with a mixture of the expenditure and revenue options previously discussed. The sharper and more sudden the cut, the more limited the schools' range of options and the greater the potential for serious disruption and socially undesirable program cuts.

6. Student Tuition and Fees

There is an additional revenue option open to schools under cost pressure which so far has only been mentioned briefly. Schools can generate new revenue by increasing their fees and tuition. There are clearly many more students trying to enter medical, dental, and most other health profession schools than there are places for them. This excess demand for health education suggests that even with substantial raises in tuitions, adequate numbers of qualified students will be retained. Most medical schools, for example, are swamped with applicants, and the overall acceptance ratio has fallen continuously since 1960, so that fewer than one applicant in three is currently accepted to medical school. Interestingly, high-tuition private schools (with a mean tuition of $2,634 in 1972-73) average 21.4 applicants per opening while low tuition public schools (mean of $925 per year) average much less at 12.1 applicants per opening.[24]

There ... ...y relative to other medica... ...schools, such as Baylor and Emo... ... South Carolina and West Vi... ...per opening and in fact no... ...even West Virginia has four applica... ...for education is so great that ... ...training which is more time ... ...rious than U.S. education. ... ...perience much difficulty i... ....

There ... ... this alternative. First, and ... ...become the exclusive ... ...lues are incompatible with ... ...to pay rather than individual ... ...to medicine or any other field. ... ...lues is made all the more ac... ...ary monetary policy. The presen... ...for students to use the banking ... ...ental signature are now an incre... ...loans are not open to most ... ...ible, they are exceedingly di... ...ngs. There is the option ... ...are guaranteed by the Federa... ...y under conditions of a budget ... ...able to undertake such l... ...limits on how much student ... ...s are not suffi-

cient to cover sharp increases in living costs and tuition.

Given the maintenance of the present growth in money supply, it is clear that student finance will become increasingly difficult. This squeeze will be made all the more onerous given the depressed state of securities markets where the savings and assets of otherwise comparatively well-off parents have suffered severely. In this connection it is important to underline that the average out of pocket expenditure for four years of medical school now runs $27,000.[25]

A second and more general objection is that, in terms of public policy, tying the financing of health education too closely to the fluctuations of private capital markets is a dubious proposition. The long-term decision to enter medical care as a career should not be influenced by high short-term interest rates and a scarcity of loanable funds. Since the provision of doctors, for example, takes place with such extended lags, the financing of their education should move according to long-term public policy and planning and not simply in step with the exigencies of short-term stabilization policy.

The obvious answer to the need for more loan funds to cover higher tuition costs in the face of a tight money market is the increased provision of direct federal loans. There are, however, two difficulties with simply increasing and expanding present H.P.E.A. loan programs. First, in many private medical schools, cost inflation coupled with a sudden elimination of capitation could at the least result in a doubling of present tuitions, which now run between $2,000 and $3,000 a year. The potential for the debt burden as costs continue to escalate is significant. Although a large debt would make loan forgiveness programs more attractive and therefore more effective, it would also act as a disincentive for many of the types

of students ... desirable. Moreover, a heavy educa... the pecuniary and entrepeneuri... should not be structured ... young graduates from entering ... practices.

In additi... the nature of loan programs, direct ... the budget and consequently ..., a policy of fiscal restraint ... inflationary impact would be dilut... have to be increased. In FY 1972, ... to $234 million, of which more than ..., was obligated as capitation ... schools. The lion's share of this ... to medical schools. If, in the ex... by cutting all capitation, the ... schools would have fallen by almost $... operating revenues in 1972-73 ... likely that average annual tui... Yet in 1972-73, fully 75 percent ... financial aid. If these students were to ... tuition, then approximately the same amou... to finance additional loans as ...

V. Conclus...

This pape... responses of health profession scho... its major concern has

been with the impact of continuing inflation and the apparent requirement for a stabilization policy which puts severe constraints on any increases in federal support. As such the analysis touches briefly on many topics which require more extensive treatment than space permits here. Yet even with this broad approach, three major conclusions can be drawn as to the impact of inflation on health professions schools.

1. A Potential Cost Squeeze

Schools face future rising costs and potential difficulty in meeting these cost increases. In medical schools, for example, the real value of faculty salaries has recently been falling, and the present rapid advance of physician income from private practice will place increasing competitive pressure on faculty salaries. If this takes place, schools will have to locate additional funding from increases in either tuition levels, patient care revenues, subsidies from state and local governments and/or federal appropriations. The ability of schools to generate additional revenue or realize significant cost reductions varies enormously between professions and between schools. Compared to a prestigious public medical school in a wealthy state, a private dental school in a state hit hard by unemployment will have a difficult time obtaining additional state aid. Small schools, which already have high tuitions and do not rely upon strict full-time faculty, will find adjustment to cost increases more difficult than will the large, low tuition school which carries on a host of activities with a full-time faculty.

If, in addition to these basic pressures, the threat of continued general inflation requires a tight fiscal policy and consequent actual cuts in federal capitation and other Health Professions Educational assistance programs, schools will face a major challenge. Table 9 presents a comparison,

by profession, [illegible] the sources of finance. It is evident that [illegible] variation in cost between professions and among [illegible] in dependence upon H.P.E.A. capitation. Dentistry [illegible] percent of the costs of education with capitation [illegible] more difficult time adjusting to a cut in this [illegible] schools of podiatry which meet only 7 percent of [illegible]. Among individual institutions in medicine, [illegible] meet 30 percent of their education costs with [illegible]. Predictions are difficult since schools may [illegible] several of the ways outlined previously. In particular, [illegible] difficulty may be able to obtain special considerations [illegible]. In the longer run, however, schools cannot expect [illegible] on a series of emergency appropriations. In the end, [illegible] because of their own rigidity, university constraints [illegible] cannot adjust their mode of operation to new conditions. [illegible] the recent past health professional education has been [illegible] they take on new responsibilities and expand [illegible] unwillingly face a new requirement for change. They will [illegible] the entire process by which education is delivered [illegible] financed.

Many more schools will [illegible] caught between rising costs and stagnant or [illegible] with the elimination of revenue losing programs [illegible] peculiarities of school financing mechanisms, the [illegible] activity elimination may be far different [illegible] as a whole places on such programs. The [illegible] squeezes develop, the greater the [illegible] made swiftly in areas such

as new curriculum development, expanded enrollment for special student categories and experiments in the delivery of health care.

2. Considerations for Current Federal Policy

If the requirements of stabilization policy dictate a cut in support for health professional education, there are at least three major considerations which should enter into decisions on cutbacks. First, a sudden sharp reduction will prove very disruptive and will gain a spending reduction at a substantial cost by not allowing schools time to adjust to the change. The Administration proposal for new health manpower legislation recognizes this essential fact and its arguments for a phased reduction should be followed.[26]

Second, if fiscal restraint is so urgent that ideal phasing is not possible, the relative importance of the different health professions will have to be faced. The issue is controversial, but we must ask whether in conditions of severe budget scarcity all the different health professions should share equally the burden of a cut in funding support. Would, for example, sudden reductions of federal support to schools of medicine, pharmacy and veterinary science be equally disruptive and undesirable?

Third, if cuts in capitation are made, increases in student aid are required to protect low and middle income families from sharp rises in tuition. Alternatively, funding for pay-back programs such as the National Health Corps will have to be increased. In either case there is a funding trade-off which obviously lessens the fiscal impact of any curtailment of capitation. Indeed, the net expenditure savings may be rather limited.

3. Short-Run Problems and Long-Run Solutions

The consequences of inflation and a possible cutback in federal funds to health profession schools may be socially undesirable. This dilemma in an inflationary environment therefore accentuates the need to examine alternative

long-run methods of [illegible] al schools.

One such alterna[illegible] have schools rely on tuition for a greater portion of their educa[illegible] achieve this, several changes would be required, both [illegible] structure where schools are situated and in federal loan polici[illegible]. Before discussing such proposals, however, the justificatio[illegible] such a drastic change in the method of financing [illegible] education.

Throughout the [illegible], applicants to such schools have consistently exc[illegible] places available. The production process is also relative[illegible] training times have been increased and student-faculty ratio[illegible] As a result of federal capitation grants, the schools began [illegible] their enrollments.

If schools were forc[illegible] on tuition revenue for a greater share of their budget, they might [illegible] more responsive to the increased number of applicants. If mandatory [illegible] increases are removed as a consequence of receiving federal capit[illegible] then there is no assurance that schools will respond [illegible] places of potential entrants. There would also be [illegible] schools to respond to demands for new types of health practitio[illegible] In fact, it would not be directly possible to make the schools [illegible] socially desirable policies as long as they receive completely [illegible] federal or state subsidies. Tuition could serve as the incen[illegible] to respond to changing demands and social concerns.

If tuition is [illegible] role, then health profession schools must be able to [illegible] structure of the universities within which th[illegible] be changed. Schools should receive the fiscal ben[illegible] cies as well as bear the burdens

of their production processes.

The impact of higher tuitions on the demands for a health career must also be assessed to ensure that every student has an equal opportunity to enter the health professions. We should therefore consider an Educational Opportunity Bank.[28] By raising capital with the sale of long-term bonds, the drain on tax revenues is eliminated. The key provisions of the Bank idea are that: (1) all students of ability have equal access to Bank credit; (2) the loans would be repaid over an extended period of time; (3) repayment schedules would be income contingent (low income in the early years means low payments; high income later on will entail higher payments); (4) the student's obligation would be guaranteed against failure in school, and if income never rises sufficiently, the borrower need never repay the full amount of his loan.

The Bank proposal has many attractive features and it appears that the threat of inflation on costs and the squeeze of anti-inflationary policy only improve the arguments for its adoption. Yet the Bank is a long-run solution to a long-run problem of educational finance. The painful dilemma of the problem is that the requirements for anti-inflationary budget cuts are immediate.

The immediate financial pressures on health professional schools, occasioned by inflation and the possibility of federal cutbacks, should be viewed as an opportunity to assist these schools in making those changes in their financial structure that will assure them of stable sources of revenue. The schools need a revenue base that cannot be affected by political decisions and one that assures positive responses of health professional training to public concerns about costs, equality of access and responsiveness to societal needs. It is important that federal policy attempt to stimulate these institutions to move in that direction.

[illegible] EDUCATION COSTS PER STUDENT
[illegible], 1972-73

Profession	Average [illegible]	Direct Instruction as % of Total Cost	Percent of Costs Due To Faculty Salaries	
			Average	Range
Medicine	$17,[illegible] - $[illegible],550	61%	43%	31% - 62%
Osteopathy	$ [illegible] - [illegible],350	73%	34%	26% - 40%
Dentistry	$ [illegible] - [illegible],600	68%	36%	29% - 44%
Optometry	$ [illegible] - [illegible]	94%	30%	24% - 35%
Pharmacy	$ 3,[illegible] - [illegible],750	73%	30%	20% - 42%
Podiatry	$ [illegible] - [illegible],700	96%	30%	27% - 32%
Veterinary Medicine	$ 7,[illegible] - $10,500	89%	31%	22% - 42%
Nursing				
Baccalaureate	$ 2,500 - $ 4,050	100%	45%	31% - 61%
Associate	$ 1,650 - $ 3,150	100%	54%	34% - 76%
Diploma	$ 3,300 - $ 4,850	100%	53%	43% - 63%

NOTE: Dollars are rounded to nearest [illegible]

The proportions of the cost of education due to faculty salaries are calculated as the proportion of direct education costs due to faculty. Research and patient care expenses which are deemed to be a necessary component of education are calculated from faculty [illegible] with other direct and indirect activities. The percentage of estimated [illegible]tion costs due to faculty salaries therefore holds for all education costs.

SOURCE: Institute of Medicine, Report of a Study, The Costs of Education in the Health Professions, Parts I, II, [illegible], January 1974. National Academy of Sciences. Columns 1 and 2 are from [illegible] xiv. Columns 3-5 are calculated by the authors.

TABLE 2

AVERAGE SALARIES FOR PRECLINICAL DEPARTMENTS
OF MEDICAL SCHOOLS 1973-74

Academic Rank	Non-South		South and Border	
	Public	Private	Public	Private
Professor	$28,530	$29,140	$28,610	$29,560
Associate	22,070	22,990	21,140	22,730
Assistant	17,750	18,260	17,460	18,260
Instructor	13,520	14,260	12,100	14,700
All Ranks	21,560	23,090	20,490	22,420

NOTE: Data are weighted means for 25 private and 47 public medical schools. Border states include Kentucky, Maryland, Missouri, Oklahoma, Tennessee, Texas and West Virginia.

SOURCE: American Association of University Professors, Bulletin (June 1974), Table 22, p. 186.

TABLE 7

RATE OF INCREASE IN FULL-TIME FACULTY SALARIES
(IN PERCENT)

Academic Years

	5-year Average 1963-1964 to 1968-1969	1969-70 to 1970-71	1970-71 to 1971-72	1971-72 to 1972-73	1972-73 to 1973-74
Basic Science[A]	n.a.	[illegible][C]	2.6%	4.3%	5.9%
Clinical Science[A]	n.a.	[illegible][B]	7.0%	5.0%	3.2%
All Medical School Faculty[A]	6.4%	6.1%[B]	5.0%[B]	4.7%	4.1%
Change in C.P.I.[D]	2.4%	5.2%	3.8%	4.8%	7.5%
Real Increase	4.0%	0.9%	1.2%	-0.1%	-3.4%
Real Increase in all University Faculty Salaries[E]	3.9%	1.0%	0.5%	0.2%	-1.6%

NOTES: A. Medical school faculty salaries from 1963-64 to 1971-72 are for median salary. For the two years between 1971-72 and 1973-74 the rate of increase is measured for mean salaries. For comparison the increases in median salaries between 1971-72 and 1972-73 were: Basic Science, 4.1%; Clinical Science, 4.5%. All figures are for strict full-time faculty excluding full-instructors.

B. Prior to 1970-71 faculty salary figures are presented only in disaggregated form for four faculty grades in ten different departments. The rate of increase between 1969-70 and 1970-71 is calculated as an average of growth in disaggregated medians weighted by the numbers of faculty in each category. A similar procedure was used to average the growth of all faculty salaries, both Basic and Clinical, between 1970-71 and 1971-72.

C. The increase between 1969-70 and 1970-71 in Basic Science faculty is calculated using updated data for 1970-71. The original survey calculates an increase of less than 1.0%.

D. Consumer Price Index has been shifted from calendar years to academic years, September to September.

E. Increase in mean salary plus fringe benefits for all years deflated by the Consumer Price Index for academic years.

SOURCES: "Datagram," Journal of Medical Education. Vol. 44 (April 1969), 317-18; Vol. 46 (April 1971), 377-78; Vol. 47 (April 1972), 305-308; Vol. 48 (June 1973), 597-602; Vol. 49 (September 1974), 913-918.

American Association of University Professors, Bulletin (Summer issues for June 1970 and June 1974).

COMPARISON OF AVERAGE FULL-TIME FACULTY SALARIES FOR MEDICAL AND DENTAL SCHOOLS (1971-72 to 1973-74)

	Medical		Dental	
	1973-74 salary ($1,000's)	Average annual % increase 1972-1974	1973-74 salary ($1,000's)	Average annual % increase 1972-1974
BASIC SCIENCE				
Professor	26.1	[illegible]	28.7	4.1%
Assoc. Professor	22.1	[illegible]	22.6	6.4%
Asst. Professor	17.7	[illegible]	18.2	5.7%
CLINICAL SCIENCE				
Professor	39.5	[illegible]	27.9	5.4%
Assoc. Professor	32.5	[illegible]	23.9	5.2%
Asst. Professor	26.9	[illegible]	20.9	3.9%

SOURCES: Association of American Medical Colleges, Division of Operational Studies, Medical School Faculty Salary Study 1973-74 (Washington, D.C., 1974).

American Association of Dental Schools, "Report of Annual Dental Faculty Salary Survey for 1973-1974 and 1971-72" (Chicago, unpublished memoranda; 1972 and 1974).

"Datagram," Journal of Medical Education, Vol. 49, No. 9 (September 1974), 913-918.

TABLE 5

GROWTH OF FACULTY AND STUDENT ENROLLMENTS IN SCHOOLS OF MEDICINE AND DENTISTRY

		1970-71	1971-72	1972-73	1973-74
	Annual Rate of Growth of Full-Time Faculty	7.3%	11.2%	13.8%	2.5%
MEDICAL SCHOOLS	Annual Rate of Growth of Medical Student Enrollment[a]	7.5%	7.8%	8.9%	6.7%
	Student-Faculty Ratio	1.53	1.48	1.41	1.47
	Annual Rate of Growth of Full-Time Faculty[b]	4.1%	4.8%	10.7%	5.8%
DENTAL SCHOOLS	Annual Rate of Growth of Dental Student Enrollment	3.4%	4.5%	6.2%	5.4%
	Student-Faculty Ratio	5.18	5.16	4.95	4.93

NOTES: a. Medical student enrollment is used for comparability with dental students. The growth of all categories of teaching responsibility exhibits a similar growth pattern: 6.4%, 12.2% and 7.8% for 1970-71 to 1972-73.

b. If the full-time equivalents of part-time faculty are included, the pattern of growth is similar but somewhat higher: 7.2%, 13.0% and 5.5% for 1971-72 to 1973-74.

SOURCES: Education Number, Journal of the American Medical Association, Vol. 226, No. 8 (November 19, 1973); information supplied by the A.M.A.; and Council on Dental Education, American Dental Association, Annual Report: Dental Education (issues for 1970-71 through 1973-74).

TABLE 6

FACULTY COMPOSITION IN SCHOOLS OF MEDICINE AND DENTISTRY

		1970-71	1971-72	1972-73	1973-74
MEDICAL SCHOOLS	Full-Time Faculty	26,504	29,469	33,550	34,394
	Part-Time Faculty	57,720	61,135	69,775	70,995
	Ratio of Part-Time to Full-Time Faculty	2.18	2.09	2.08	2.06
	Ratio of Strict Full-Time to Geographic Full-Time[a]	2.08	2.13	2.19	2.02
DENTAL SCHOOLS	Full-Time Faculty	3,197	3,351	3,711	3,927
	Part-Time Faculty	5,190	5,612	5,686	5,857
	Ratio of Part-Time to Full-Time Faculty	1.62	1.67	1.53	1.49
	Hours Worked by Average Part-Time as a % of Average Full-Time Faculty[b]	21.7%	22.6%	26.5%	27.0%

NOTES: a. Strict full-time faculty works full-time for the medical school for a set salary and earns no significant additional income from outside medical practice. Geographic full-time faculty earns a negotiable portion of its income from externally financed patient care. These definitions are subject to varying interpretations by different schools. The introduction of a school medical practice plan will convert geographic faculty to strict full-time status.

b. The percentages are the average conversion factors used to estimate part-time faculty in terms of full-time equivalents.

SOURCES: Education Number, Journal of the American Medical Association. Vol. 226, No. 8 (November 19, 1973); and Council on Dental Education, American Dental Association Annual Report: Dental Education (issues for 1970-71 through 1973-74).

TABLE 7

SOURCES OF REVENUE FOR HEALTH PROFESSION SCHOOLS (1971-72)[a]
(in percent)

	Medical		Dental		Optometry		Pharmacy		Podiatry		Veterinary		Diploma Nursing	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
Tuition & Fees	4%	0%-11%	18%	7%-33%	28%	15%-49%	10%	7%-80%	36%	29%-56%	N.A.	4%- 9%	28%	3%-48%
Research	28%	15%-55%	9%	5%-30%	6%	0%- 4%	7%	0%-34%	N.A.	b	35%	11%-37%	0%	0%- 0%
Patient Care	7%	2%-35%		6%-19%	18%	13%-30%	1%	0%-16%	26%	2%-50%	13%	6%-19%	63%	36%-79%
State Support	16%	0%-44%	35%	0%-54%	6%	0%-21%	23%	0%-48%	4%	0%-10%	37%	22%-37%	19%	0%-12%
Endowment & Gifts	4%	0%-21%	2%	0%- 5%	2%	0%-15%	2%	2%-53%	b	b-1	1%	0%-27%	1%	0-15%

NOTES: a. The sources of revenue do not add to 100% and exclude federal non-research support, other sources of teaching and training grants, general university support and "other." These categories could not be calculated with uniformity from the various source tables.

b. Less than .5%

SOURCE: Institute of Medicine, Costs of Education in the Health Professions, Parts I and II (Washington, D.C., 1974).

TABLE 8

CHANGES IN THE SOURCES OF FUNDING FOR SCHOOLS OF MEDICINE AND DENTISTRY[a] (IN $MILLIONS).

		1969-70		1970-71		1971-72		1972-73	
		Amount	%	Amount	%	Amount	%	Amount	%
MEDICAL SCHOOLS	Tuition and Fees	$56.4	4%	$63.3	4%	$78.5	4%	$90.5	4%
	Sponsored Research[b]	$605.4	39%	$604.4	35%	$712.0	37%	$767.9	36%
	Patient Care[c]	$160.4	10%	$197.3	12%	$182.9	9%	$200.9	9%
	State and Local Government Budget Support[d]	$235.1	15%	$291.2	17%	$311.9	16%	$358.2	17%
	Gifts and Endowments	$53.3	3%	$56.7	3%	$70.8	4%	$69.3	3%
	Non-research Federal Support[e]	$363.5	23%	$423.2	25%	$471.3	24%	$545.3	26%
	Other	$76.9	5%	$76.2	4%	$115.3	6%	$78.3	4%
	Total	$1,551.0	100%	$1,712.5	100%	$1,942.8	100%	$2,110.4	100%
DENTAL SCHOOLS	Tuition and Fees			$28.8	19%	$36.3	19%	$41.1	18%
	Sponsored Research[b]			$17.5	12%	$21.0	11%	$24.3	10%
	Patient Care			$19.9	13%	$20.6	11%	$21.8	9%
	State and Local Government Budget Support[d]			$41.5	28%	$69.2	36%	$85.9	37%
	Gifts and Endowments[f]			$2.7	2%	$4.1	2%	$4.9	2%
	Non-research Federal Support[e]			$31.9	21%	$33.1	17%	$47.5	20%
	Other			$7.0	5%	$5.2	3%	$6.9	3%
	Total			$149.3	100%	$189.7	100%	$232.5	100%

TABLE 8

NOTES: a. The data are drawn from annual questionnaires submitted by individual schools to the American Medical Association and the American Dental Association. The number of schools not reporting charges from year to year so that annual rates of growth must be interpreted with care. The data for Dental Schools for 1969-70 is not in a compatable format with subsequent years and is excluded.

b. Sponsored Research is defined to include both direct expenditures for research grants and contracts and the "overhead" which is allocated to the operating budget. The figure is overestimated since it includes overhead on "teaching and training" grants and contracts

c. Patient care income is defined as the sum of revenue from hospital and clinics, medical service plans and college services. The figure for this combined category of income dropped 7.3% in 1971-72. This is misleading, however, due to a change in the method of reporting in the JAMA Education Numbers. Beginning in 1971-72, revenue from teaching hospitals and clinics (equal to approximately $60 million), instead of being separately reported, was spread out into other categories.

d. State and local support is defined as the sum of direct state appropriations to both public and private schools and revenue through inter-state compacts. The data for 1970-71 for dental schools includes transfers from the general budget of public universities and may not be strictly comparable with subsequent years.

e. Non-research federal support includes highly diverse categories of funding including H.P.E.A. programs and all teaching and training grants.

f. Gifts and endowments include both restricted and unrestricted funds for dental schools. Gifts and endowments which are restricted to research are included here.

SOURCES: Education Number, Journal of the American Medical Association, Vol. 226, No. 8 (November 19, 1973); Division of Educational Measurements, Council on Dental Education, American Dental Association, Annual Report on Dental Education; Financial Information volumes for 1970-71, 1971-72 and 1972-73; Information supplied by the AMA.

TABLE 9

FINANCING THE COST OF HEALTH PROFESSIONAL EDUCATION

A. Sources of Financing per Student Costs

Profession	Average Annual Cost of Education Per Student	% covered by Sponsored Research	Patient Care	H.P.E.A. Capitation
Medicine[a]	$13,100	16.0%	9.9%	14.9%
Osteopathy[b]	8,950	1.1%	20.7%	15.0%
Dentistry[a]	9,050	7.7%	10.5%	21.9%
Optometry	4,250	1.2%	24.7%	7.9%
Pharmacy	3,550	12.7%	1.4%	10.9%
Podiatry	5,750	----	13.9%	7.0%
Veterinary	7,500	8.0%	18.0%	10.0%
Diploma Nursing	3,300	----	54.6%	6.5%

B. Range of Variation Between Sampled Schools

Profession	Range of Estimates for Per Student Costs	% covered by Sponsored Research	Patient Care	H.P.E.A. Capitation
Medicine[a]	$18,650-$6,900	28.3%- 0%	26.3%- 0%	29.0%-10.0%
Osteopathy[b]	12,338- 6,889	1.5%-.9%	35.4%- 0%	26.3%-15.2%
Dentistry[c]	16,000- 6,132	11.1%- 0%	19.0%- 5.0%	29.6%-13.0%
Optometry	4,755- 3,739	4.4%- 0%	31.5%-13.3%	9.7%- 6.8%
Pharmacy	5,745- 1,579	25.6%- 0%	11.7%- 0%	28.4%- 5.8%
Podiatry	6,680- 6,108	.4%- 0%	26.3%- 2.3%	9.3%- 6.0%
Veterinary	10,613- 6,058	12.6%- 0%	24.9%-12.0%	12.6%- 8.1%
Diploma Nursing[c]	4,855- 1,868	----	88.8%-22.1%	9.0%- 6.4%

NOTES: a. Not including one medical school for which capitation data was unavailable.

b. Not including one school which had not qualified for a full year grant.

c. Excluding private schools which did not apply for capitation. The actual range of dependence is bounded by zero.

SOURCE: Institute of Medicine, Report of a Study, Costs of Education in the Health Professions, I and II, January 1974.

REFERENCES

1. Institute of Medicine, National Academy of Sciences, Cost of Education in the Health Professions, Report of a Study, Parts I and II (Washington D.C., National Academy of Sciences), 1974.

2. Division of Educational Measurements, Council on Dental Education, American Dental Association, Annual Report on Dental Education, 1971-72; Financial Information. Out of a total average per school operating budget of $2.4 million, $1.2 million was allocated to academic faculty salaries.

3. Institute of Medicine, op. cit., pp. 79-84.

4. Between 1967 and 1971 average physician income increased from $21,104 to $30,505. U.S. Department of Commerce, Bureau of the Census, Current Population Reports series P-60, Issues: No. 59 (1969), Table 6; and No. 85 (1972), Tables 37 and 55.

5. Annualized from the four month increase from May to August of 1974 in the physician fee index. Office of Research and Statistics, Social Security Administration, Monthly Statistical Report: Summary of Selected Price, Cost, and Utilization Data for the Health Care Market in the United States (October, 1974).

6. Faculty-medical student ratios are misleading in that a simple ratio does not indicate the real level of faculty resources devoted to the instruction of graduate medical students. Since faculty members have a great many responsibilities, aggregate figures may disguise any changes which occur in the utilization of faculty within different programs. For the 1972-73 school year, the Institute of Medicine study used faculty effort reports to determine faculty time allocation, and estimated an average instructional faculty-medical student ratio of 1:8. The instructional faculty-medical student ratio varied widely across the schools, from 1:6 to a 1:13 ratio. Institute of Medicine, op. cit.

7. In 1966-67 medical schools on the average employed one full-time faculty member for every 1.7 medical students. Of the 18 medical schools that received emergency financial distress grants in 1970, all but four had significantly higher student-faculty ratios. Two of the four low ratio schools, the University of Chicago and Albert Einstein-Yeshiva University, are heavily engaged in research rather than undergraduate training. Calculated from: testimony provided by Dr. Kenneth Endicott, Director of the Bureau of Health Manpower Education in House of Representatives, Health Professions Educational Assistance Amendments of 1971; Hearings before the Subcommittee on Public Health and Environment of the Committee on Interstate and Foreign Commerce (Serial No. 92-10), Part II, pp. 919-21; C.N. Theodore, G.E. Sutter, and J.N. Haug, Medical School Alumni, 1967 (Chicago: Department of Survey Research, American Medical Association, 1968), Appendix X, pp. 661-662.

8. R.L. Evans, J.G. Pittman, and R.C. Peters, "The Community-Based Medical School:Reactions at the Interface Between Medical Educatior

and Medical Care," The New England Journal of Medicine, 288 (1973), 713-18. S.C. Beering, G.T. Lukemeyer, and G.W. Irwin, "Statewide Education in Indiana," Unpublished paper (April, 1972).

9. The experiment is being conducted at the University of California, Berkeley, with a contract from H.E.W. The University, which does not have a medical school, provides the first two years of basic science training in established departments with the aid of specialized seminars for medical students.

10. A four-year program emphasizing family practice in rural settings is being established in Escanaba in Michigan's Upper Peninsula. Administered by Michigan State University College of Medicine, the program is centered in a group practice clinic and funded by various federal, state and local organizations.

11. In response to a proposed budget cut in 1972, the A.A.M.C. surveyed 78 of its member schools and tabulated their projected responses to the cut. While the point of this publication was to influence public and Congressional opinion, the type of cuts proposed are of relevance to this discussion. Association of American Medical Colleges, Nation's Resources for Medical Education--Implications of the President's Fiscal Year 1974 Budget Recommendations on Programs of the Nation's Medical Schools (Chicago, 1973).

12. R. Fein, and G. Weber, Financing Medical Education (New York: McGraw-Hill Book Company, 1971), Chapter 2.

13. Institute of Medicine, op. cit., pp. # 90 and 144. See also Table 9 of this article.

14. Calculated from U.S.H.E.W., Public Health Service, N.I.H., DHEW Obligations to Medical Schools annual issues for Fiscal Year 1969 (Washington: 1971), and Fiscal Year 1971, Vol. 3 (Washington, n.d.).

15. Institute of Medicine, op. cit., Table 88, p. 147. Public Schools average 9% of their income from patient care while private schools obtained 14% from this source.

16. Institute of Medicine, op.cit., Table 38, p.71, and Association of American Medical Colleges, Undergraduate Medical Education: Elements - Objectives - Costs, Report of the Committee on the Financing of Medical Education (Washington, 1973), Chart 1.

17. R.G. Petersdorf, "Departments of Medicine - 1973," New England Journal of Medicine, 291 (1974), 440-45.

18. State operating budget support has been defined as the total of state appropriations plus state and local subsidies and payments via interstate compacts. Federal operating budget support has been defined as the total of teaching and training contracts and grants plus sponsored multi-purpose obligations. Excluded are the indirect costs recovered on federal contracts and grants. Although these are viewed by the schools as operating revenue, the vast majority of these funds are turned over as part of sponsored research, not educational support. Education Number, Journal of the American Medical Association, 226 (1973), Tables 29-36; and unpublished data for the forthcoming Education Number.

19. Council on Dental Education, American Dental Association, Annual Report 1972-73, Dental Education Supplement Financial Report, Tables 1 and 5.

20. Education Number, JAMA,op.cit., 909-10; Datagram, Journal of Medical Education, 47 (1972), 358-62.

21. For statements justifying the necessity of capitation in the face of the inequities and uncertainties accompanying other sources of revenue, see: Association of American Medical Colleges, Financing Undergraduate Medical Education, A Statement of Policy, Report of the Committee on the Financing of Medical Education (Washington, 1974); and the testimony of Dr. William G. Anlyan, Chairman, Executive Council, AAMC in House of Representatives, op. cit., pp. 532-547.

22. For general analysis of the retionale for Federal Subsidies see: Fein and Weber, op. cit., pp.185-89; C.T. Stewart, and C.M. Siddayao, Increasing the Supply of Medical Personnel (Washington: American Enterprise Institute, 1973), Chapter III; P.J. Feldstein, Financing Dental Care: An Economic Analysis (Lexington, Mass.: Lexington Books, 1973), pp.116-127; G.E. Wright, Why Should We Subsidize Medical Education?, Health Manpower Policy Discussion Paper A6 (Ann Arbor, Michigan: The University of Michigan, School of Public Health's Health Manpower Policy Studies Group, 1974).

23. The Kennedy-Javits Health Manpower Bill, S3585, followed the proposal of the Institute of Medicine and authorized a flat level of capitation of $3250. This represents only a 13% increase over the average capitation authorization in the existing legislation or a six-year (1971-77) average annual growth in support of 2.2%. Other legislative proposals authorized significantly lower levels of support involving programs to phase out capitation.

24. Calculated from data presented in: W.F. Dube, O.G. Johnson, and B. Nelson, "Study of U.S. Medical School Applicants, 1971-72," Journal of Medical Education, 48 (1973), 395-420; and Education Number, JAMA, op. cit.

25. In 1971 the average medical student spent $5,529 a year on tuition, books and maintenance. Costs, however, have been increasing at 6.5% a year. See: Louis Smith and Anna Crocker, How Medical Students Finance Their Education, (Washington, D.C.: HEW, National Institutes of Health, Division of Physician Manpower, 1970); U.S. Department of Health Education and Welfare, How Health Profession Students Finance Their Education, DHEW Publication No. (HRA) 74-13, 1974.

26. For a synopsis of Administration policy, see: Health Manpower Report (May 28, 1974), pp. 2-6.

27. For recent reviews of the proposals for deferred tuition plans and a more formal Education Opportunity Bank, see: M. Nerlove, "On Tuition and the Cost of Higher Education," Journal of Political Economy, 80 (May-June, 1972), 178-218; and R.B. Nelson, and G. Rodgers, "An Analysis of the Educational Opportunity Bank for Medical Student Financing," Journal of Medical Education, 47 (1972); D.R. Challoner, "The Medical Student Pays for His Education: Income Contingent Loans," New England Journal of Medicine, 290 (1974), 160-62; Fein and Weber, op. cit., pp.223-30.