WHERE WILL THE RESOURCES FOR THE FIFTH YEAR COME FROM?

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by

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Introduction

This article presents a teaching hospital perspective on the financial implications of the plan to lengthen pathology residency training by adding a fifth year to combined clinical and anatomic residencies and a fourth year to individual programs. Both are referred to as the "fifth year" throughout the paper.

The new requirement for adding a fifth year presents a very formidable resource challenge to training programs. The response to this requirement will undoubtedly depend on a realistic assessment of the various financing possibilities available in respective settings; an evaluation of the impact of possible responses to the new requirement on the effectiveness of training; and, finally, on consideration of national and regional perceptions regarding the number of pathologists needed in future years.

Resource considerations for the fifth year involve: What will it cost to implement another year of residency training? What options exist to avoid the added cost? What potential sources are available for funding the extra year? What is the likelihood that these sources can actually provide support? And, finally, what alternative ways are available for meeting the requirement of an added year of training without adding to costs? In this general context, it is important to consider the implications of the new Medicare Prospective Payment System and other related changes in payment currently impacting academic medical centers.

Estimated Cost of Fifth Year

What are the resources committed to pathology training today? To study this question, the University of Iowa Hospitals and Clinics conducted a survey of eight pathology residency programs at major U.S. teaching hospitals during August and September of 1983. Based on data from that survey, it costs an estimated $45,500 to train one resident for one year (see Exhibit I).[1] This figure includes the cost of the residents' stipends and fringe benefits, the portion of Pathology Department faculty costs attributable to clinical supervision of residents and administration of the residency programs, as well as other expenses for staff support, supplies, and overhead which are properly allocable to pathology residency training. These costs are calculated using Medicare cost reimbursement principles and, therefore, do not reflect any offset for service performed by the resident.

Total annual cost for pathology residency training throughout the nation was estimated to be $116 million, based on $45,500 for each of the approximately 2,500 pathology residents[2] being trained in the 299 pathology residency programs[3] in the United States in 1983-84.

The current resident composition of pathology training programs and the projected cost of the fifth year are summarized in Exhibit II. There are now an average of approximately 635 residents in each of the first four years of pathology training. From each year-level of training, about 130 residents complete at least one year of graduate medical education before entering pathology,[4] about 35 complete a voluntary fifth year of subspecialty training that is not designed to lead to special competency certification,[5] about 40 residents take an extra year of training to seek special competency certification in programs not subject to accreditation by the ACGME,[6] and an additional 130 residents pursue a fifth and in some cases a sixth year in a subspecialty of pathology accredited by the ACGME.[7]

To estimate the costs of adding a fifth year of training, three assumptions were made. First, assume that there will continue to be 130 residents entering pathology training each year with one year of prior training. Second, assume that the 35 pathology residents who now complete a fifth year of training in a subspecialty not leading to certification will complete this subspecialty training as fifth year residents under the new requirement and therefore will not pursue training beyond the fifth year. This should be a reasonable assumption since, under the new certification protocol, a year in one of the specialty fields of pathology may be used to meet the fifth-year requirement.[8] Third, assume that the same number of individuals, i.e., 170 (40 + 130) who currently complete basic pathology residency training and then enter subspecialty programs leading to special competency certification will continue to pursue additional training after the fifth year. This again is a reasonable assumption since residents desiring special competency certification will need to pursue a sixth and perhaps a seventh year of training to secure such certification after the fifth-year requirement takes effect.[9]

Given these assumptions, there would be no additional cost for the 130 residents coming into pathology with a prior year of training or for the 35 residents now completing an additional year in programs not leading to special competency certification (see Exhibit II). Accordingly, the added cost of the fifth-year requirement will be composed of the remaining three elements shown in Exhibit II.

First, approximately $1.8 million will be required to provide funding for the 40 residents now pursuing a fifth year in programs which lead to certification but which are not encompassed within the accreditation process. Many of the individuals in this group are now largely funded by personally earned professional service income that they will no longer be permitted to collect when they become official "fifth year" residents in accredited training programs to meet the new requirement. However, because it is likely that this income will continue to be earned through the faculty's personal review of the fifth year resident's work, the projected additional training cost may be somewhat offset by the greater clinical productivity of faculty assisted by fifth-year trainees.

Second, additional funding will be necessary for the trainees who elect to take a sixth or seventh year of training to be eligible for special competency certification in subspecialties accredited by the ACGME. If the 130 residents who now pursue this type of special competency certification continue to do so, this training element will cost an estimated $5.9 million.

And finally, approximately $13.6 million will be required to fund a fifth year of training for the remaining 300 residents who are not now pursuing a fifth year of training. Thus, the total additional dollars needed to fund the fifth-year requirement could be as much as $21.3 million based on 1983 dollars. This figure may be adjusted downward if some training programs have existing capacity in the faculty to absorb the fifth year of training without incremental staff. While the matter of decreasing marginal costs for adding the fifth year of training must necessarily be addressed on an individual program basis, a substantial downward revision in the aggregate cost projection of $21.3 million would not be expected.

Options to Avoid the Added Cost

In view of the adverse economic climate presently prevailing in academic medical centers, pathology residency programs may attempt to avoid some or all of this added financial burden in one of two ways as reflected in Exhibit III. First, pathology programs could attempt to require residents to complete one year of clinical training before being accepted in pathology. Second, programs could reduce the number of residents per year, possibly including some subspecialty fellowship positions, so that the total complement of trainees over the five-year span remains virtually the same.

Each of these options could have some detrimental impact on the training of pathologists. Nevertheless, with the first option, a resident would have two possible avenues for securing an initial year of clinical training outside of pathology: first, through completion of a "transitional year" program providing a twelve-month rotational experience in several specialties or, second, through completion of the first year of a primary care residency training program. With growing competition for residency training positions (in 1983 the NRMP had 20,044 applicants for 17,952 positions),[10] it is questionable whether transitional programs could absorb a large number of additional residents seeking a prelude to pathology training. Economic constraints faced by teaching hospitals (to be discussed later), make it doubtful that the number of transitional programs will be expanded in any significant way. Availability of the second avenue for a prior year of training is also questionable because few high-quality primary care residency programs will knowingly be accepting a larger number of residents who plan to leave after one year of training. The old "pyramid system" has long ago been replaced in most programs by an anticipation that all residents will commence training with the expectation of completing the entire program. Thus, residents who might apply to pathology training programs via this channel would tend to have completed a training year in a weak residency program which may impede subsequent training in pathology. Given the limitations of these two channels, pathology programs may expect to encounter great difficulty in securing an adequate number of high-quality applicants who have a prior training year, particularly if <u>all</u> pathology programs do not require a prior year of training or if some programs are able to develop arrangements for the first year to be completed within their home institution.

The second option for moderating the added cost of the fifth year, i.e. reducing the number of residents and fellows in each year of training to offset the cost of the fifth year, could erode the essential "critical mass" of house staff at each training level essential to fostering a strong program. However, since many programs may have no choice but to pursue this option, creative changes in scheduling of residents to promote substitute forms of training interaction may be necessary.

The "bottom line," of course, is that if pathology residency programs do not or cannot require residents to complete a year of prior training and do not or cannot reduce the number of residents and fellows in training, the $21.3 million in additional funding previously outlined will be required to implement the new requirement for a fifth year of training.

Possible Sources of Support for an Additional Year of Training

The primary source of support for residency training currently comes from teaching hospital patient revenues. Secondary sources of support include professional fee income, medical school or university funds, grants, and in some instances, state and municipal appropriations. Since grants and governmental appropriations have generally not played a large role in funding residency training and, in fact, have been a declining source of support in recent years, what are the possibilities for securing the additional support from teaching hospital patient revenue and from professional fee earnings available through pathology departments?

Teaching Hospital Funding

In a few settings, pathology programs may be able to secure additional teaching hospital support, but it will be the exception rather than the rule. Teaching hospitals are entering the era of prospective payment and will not have the financial option of assuming additional educational costs. While it is true that the initial version of Medicare Prospective Payment has a "passthrough" for direct educational costs and an adjustment for so-called indirect educational costs, the Medicare system, in the aggregate, will not fully pay its share of the "additional costs" which teaching hospitals incur.[11] Moreover, few people knowledgeable in teaching hospital finance expect the Medicare payment provisions for educational costs to be sustained even at their start-up levels.

Thus, prudent teaching hospital directors will not be making substantial long-term commitments to residency program expansion in reliance on present Medicare prospective payment provisions.

Prospective Hospital Payment Under DRGs

Why will teaching hospitals be "gun shy" about making new financial commitments for the fifth year of pathology residency training?

In April, 1983, President Reagan signed legislation establishing a Medicare Prospective Payment System based on Diagnosis Related Groups or DRGs.[12] The legislation, which is being implemented on a phased basis starting on October 1, 1983, is introducing revolutionary change in the manner in which payment is made for health services provided to a large segment of the American public. Indeed, the new payment concept represents the first fundamental change in the payment system for this nation's hospitals in nearly half a century.

The Medicare program has, since its inception in 1965, financed hospital care through a retrospective, cost-based system fostered by some of the Blue Cross Plans in the late 1930s and early 1940s. Use of this traditional payment method by Medicare has triggered the infusion of large sums of money into the health sector, enabling teaching hospitals and colleges of medicine to develop highly specialized services, obtain the most advanced medical technology, and significantly expand their teaching, research and clinical operations. The new DRG payment system, however, reverses the basic financial incentives, at the same time that growth in the aggregate number of dollars available for health care is being curtailed. As a result of this changing economic environment, it is reasonable to anticipate that teaching hospitals and colleges of medicine will experience more moderate rates of growth in the period ahead.

Moreover, the new system, which will initially focus on payments for inpatient hospital care, has implications which far transcend hospital financing per se. The legislation will significantly affect the way hospitals are managed by refocusing patient care and allied missions and by generating substantial change in hospital management systems and physician practice patterns to more explicitly recognize economic considerations. For academic medical centers, it will necessitate indepth re-examination of current patient care practices, if these centers are to continue to meet their traditional tripartite missions of patient care, teaching and research. The challenge is clear -- the DRG payment system places many health care institutions, but especially academic medical centers, at significant risk!

Generic Problems with DRGs

Following a three-year transitional period, the DRG system will pay hospitals a fixed payment per patient discharge, which will vary only by the DRG grouping into which the patient's clinical condition and care falls. All combinations of the 11,828 diagnoses and 33,000 procedures currently included within the coding system of the International Classification of Disease have been consolidated into only 468 Diagnostic Related Groups. Payments for each diagnostic group will be calculated on the basis of the average cost of caring for a patient in each of the DRGs throughout virtually all of the nation's 6,000 acute general hospitals. Separate payment levels will be calculated for urban and rural hospitals, and adjustments for local wage rates and for some unusually long or costly cases, called "outliers," will be recognized. However, the underlying averaging concept involved in calculating the basic DRG payment will nevertheless operate to the considerable disadvantage of most teaching hospitals which have a substantial number of critically ill patients with complex problems.

Teaching hospitals are at particular risk because of two substantial vulnerabilities intrinsic to the DRG system as currently designed. The first vulnerability is due to the system's inadequate way of recognizing the costs incurred by teaching hospitals in producing a broad array of societal goods, beyond the care provided to patients with complex clinical problems. Colleges of medicine and teaching hospitals are the producers of multiple products that benefit not only the individual patient, but society as a whole. These products include graduate medical and other health science education, new technology testing, clinical research, substantial amounts of charity care, highly specialized services, and extensive ambulatory care programs operating on a subsidized basis. Generation of these multiple products, which in this presentation will be identified as "societal contributions," necessarily results in higher costs that must be reflected in teaching hospital patient charges. Obviously, the teaching hospital payment under the DRG system, if it is to be equitable and sustain the generation of these societal contributions, must be differentiated from that paid to a community hospital which does not incur these costs. Fortunately, this need has been recognized by Congress, to a certain extent, as will be described later.

To gain an appreciation for the magnitude of total costs involved in providing these societal contributions, the University of Iowa Hospitals, in 1981, conducted a survey of the 270 Council of Teaching Hospitals' members with major college of medicine affiliations. Some of the resulting data, which was originally used in a paper on competition for the Duke University Private Sector Conference in 1981,[13] is presented in Exhibits IV, V and VI.

In the aggregate, as shown on Exhibit IV, in fiscal 1981 the financial needs of these 270 major teaching hospitals totaled some $20.2 billion. Basic patient care services accounted for $14.1 billion or 70% of the total, while the additional societal contributions totaled $6.1 billion or 30% of the total financial needs of these 270 COTH members.

The composition of these societal contributions and the identifiable costs associated with each are delineated in Exhibit V. They are divided into two basic groups. One group includes graduate medical, dental, and other health science educational programs with direct costs of $1.2 billion; ambulatory care program deficits at a cost of $340 million; and large scale charity care at a cost of $1.7 billion. The aggregate cost of these programs in 1981 was $3.2 billion.

The second group of societal contributions includes clinical research support, new technology testing, and highly specialized services and intensive case mix at an aggregate cost of $2.9 billion during 1981. Because the cost of these latter programs is not directly measurable, this figure was derived through a somewhat complex formula based on the per diem differential between the 270 COTH members and all other non-federal acute general hospitals, after factoring out the cost of measurable societal contributions.

Obviously, a DRG payment that is calculated on the basis of average costs across virtually all of the nation's 6,000 acute general hospitals will not accommodate a sizable portion of the $6.1 billion costs incurred in providing these societal contributions.

So what did Congress offer in recognition of these unique needs of teaching hospitals? First, as a supplement to the basic DRG payment, it provided for continued payment of direct educational costs, consisting largely of house staff stipends, on a "passthrough" basis. This payment, of approximately $384 million by Medicare, when coupled with an assumed full payment by other payors of their proportionate share of direct educational costs, will cover $1.2

billion or approximately 20% of the $6.1 billion aggregate cost of the societal contributions.[14] Second, due to the diligent efforts and persuasive arguments of the AAMC and others that teaching hospitals would be particularly disadvantaged under the DRG system, Congress arbitrarily increased the indirect educational cost factor now paid in Medicare rates with the following explanation:

> "This adjustment is provided in the light of doubts . . . about the ability of the DRG case classification system to account fully for factors such as severity of illness of patients requiring the specialized services and treatment programs provided by teaching institutions and the additional costs associated with the teaching of residents . . . The adjustment for indirect medical education costs is only a proxy to account for a number of factors which may legitimately increase costs in teaching institutions."[15]

The indirect educational cost adjustment, which is a percentage increase in each teaching hospital's DRG payment based on the number of resident physicians per bed, will add approximately $1.3 billion to aggregate teaching hospital Medicare payments under the DRG system. Because the Medicare portion of societal contribution costs for which the indirect educational adjustment is serving as a proxy payment is approximately $1.6 billion, the 270 teaching hospitals develop a shortfall in payment for these particular costs of some $320 million based on 1981 costs.[16]

The estimated payment to the nation's 270 major teaching hospitals for costs of all societal contributions through both the direct and indirect educational adjustments is summarized in Exhibit VI.

Now, admittedly, a shortfall of $320 million on a base of $20 billion for these 270 major teaching hospitals represents a potential insufficiency of only 1.5%. The shortfall may in fact be less than these hospitals are experiencing under present Medicare reimbursement which also pays less than the full cost of all societal contributions. However, the new payment system has the potential of considerably complicating the present shortfall problem. First, the shortfall will not be evenly distributed among teaching hospitals because the costs being paid through the indirect educational cost proxy are not evenly distributed. Indeed, the equitable distribution of the full $1.2 billion indirect educational support dollars may prove to be a major problem for teaching hospitals, if it does not "track," hospital by hospital, with the costs it is designed to support. Second, the $320 million constitutes only one element of potential shortfall -- the other, and perhaps the more significant, will be described later when discussing operating disparities among teaching hospitals.

It should be further recognized that continuation of the factor for indirect educational support is highly vulnerable on the political front for several reasons. First, because it is arbitrarily derived; second, because it is a remarkably large undelineated sum, ($1.3 billion from Medicare for 270 COTH hospitals); and finally, and perhaps most importantly, because it is "out in the open" without a strong quantitative basis supporting its formulation. Moreover, this adjustment will be a prime target for political manipulation in response to concerns regarding the projected 1995 deficit of $300-$400 billion in the Medicare Hospital Insurance Trust Fund,[17] as well as the alleged future surplus of highly trained physicians whose training is subsidized by these dollars. Such concerns are already leading to suggestions for complete termination of graduate medical education support from Medicare funds, as evidenced in the recommendation by the Advisory Council on Social Security this past August calling for an immediate study of the restructuring of medical education financing "to provide for the orderly withdrawal of Medicare funds from training support."[18] The continued scrutiny of this support, a development which parallels the history of medical school capitation allowances, will necessitate a concerted effort on the Congressional front by the AAMC and others to sustain this proxy payment for the costs of societal contributions flowing from teaching hospitals.

Teaching Hospital Disparities

The second significant vulnerability of teaching hospitals and colleges of medicine under the DRG system is embodied in the wide disparity among teaching hospitals in basic operating parameters such as operating costs per admission, staffing ratios per occupied bed, expenditures for nonsalary costs per occupied bed, and average lengths of stay. These highly divergent operating features, which again are incompatible with a payment system based on national averaging of virtually all acute general hospitals, are illustrated in Exhibits VII through XI. These figures, for our nation's 64 university-owned teaching hospitals, were obtained through the 1982 annual survey conducted by the AAMC's Council of Teaching Hospitals. The identities of the teaching hospitals are confidential and, accordingly, are omitted.

When comparing staff to occupied bed ratios of these 64 university-owned teaching hospitals (Exhibit VII) the ratios range from 8.9 to a low of 4.0, with the median ratio at 6.1 staff per occupied bed. These wide divergencies, of course, involve huge sums of dollars. For example, the hospital on the high side of the scale has a ratio that is three staff per occupied bed, or 50% greater, than the median hospital. If this comparison involved two 500-bed fully occupied hospitals, the aggregate staffing differential would be 1,500 full-time equivalents or some $30 million dollars of annual cost difference between these two hospitals for this one operating parameter.

Exhibit VIII presents a similar comparison of annual nonpayroll expense per occupied bed among these 64 teaching hospitals. The highest expenditure level for this parameter was $254,000 per bed and the lowest was $35,000, with the median being $81,000. This feature again involves very large sums of dollars when the differentials are extrapolated to the full complement of occupied beds in any given teaching hospital.

Exhibit IX shows that the average per diem cost among these hospitals ranges from a high of $751 per day to a low of $233 with a median of $426.

Similarly, Exhibit X shows that the average expense per admission also varies significantly among these hospitals, ranging from a high of $6,886 to a low of $1,935, more than a 250% difference. The median hospital's cost is $3,786.

Likewise, Exhibit XI shows that average lengths of stay vary by almost 90% from a high of 11.9 days to a low of 6.3, with a median of 8.8 days.

These broad disparities in basic operating parameters result in substantial variation among hospitals in the consumption of resources for the care of patients in most any given DRG. While some of the differences are undoubtedly justifiable, much of the disparity is probably not. Rather, the disparities most likely are the consequence of differing financial allocation decisions among the intermingled missions of patient care, teaching, and research; different styles and patterns of medical practice; varying degrees of managerial sophistication; and a host of other variables that hospitals wishing to adapt and prosper under the DRG system must correct. If corrective action is not or cannot be initiated, institutions on the high end of these cost ranges will be subject to the new "scalpel" known as the DRG average payment per discharge. In effect, the government, which currently pays approximately 32% of teaching hospital costs, is affirming its view that neither it nor teaching hospitals can justify these wide disparities and, accordingly, Medicare will pay the average and expect teaching hospitals to remediate the situation by finding alternate sources of support, reducing the scope of our programs or, at the extreme, ceasing to operate.

At this juncture, it is not possible to determine what the specific impact of DRG payments, based on national averages, will be on given teaching hospitals within the broad range of costs just viewed. However, it would be fair to conclude that those hospitals falling in the two upper quartiles are likely to be in a vulnerable position under the new payment system. Accordingly, it is likely to be a major achievement at most centers to even sustain residency funding at present levels, let alone adding the costs of the fifth year for pathology programs. Given the fixed nature of teaching hospital revenues that is rapidly coming into place, it would also be reasonable to anticipate fierce competition for available dollars between present programs and services and new demands arising from medical advances which are certain to evolve in the period ahead.

Departmental Funding

One alternative to hospital funding that might be considered is self funding from departmental professional service income. However, in most settings, these resources are also being constrained. One practical option for funding a portion of the fifth year costs, namely, practice earnings of the practitioner-turned-trainee, will be foreclosed if the fifth year is converted into a required training year. Medicare law precludes professional fee billing by physicians enrolled in approved training programs. As long as the fifth year is not part of the approved training program, fifth-year trainees may bill Medicare and other third-party payors for their services and the payments collected may be used to assist in funding the additional year of post residency training. With a new requirement for a fifth year of training, residents who begin their training after June 30, 1985, would not be permitted to bill Medicare or Medicaid during the full five years of training. Even with the enhanced productivity level of faculty assisted by fifth-year residents, the prevailing level of competition for patients will make it unlikely that many departments will have the additional workload to generate professional fee income adequate to support another level of pathology resident trainees. Thus, many departments will not have the capacity to assume the added financial burden of the fifth year from professional fee earnings.

Ultimate Options for Funding Fifth Year

This study suggests that in most teaching hospitals the incremental resources for the fifth year of pathology training could only be derived from reallocation of existing resources, assuming the Pathology Board does not modify the new requirement. Thus, it would seem there are, at this juncture, two realistic options to pursue as shown in Exhibit XII.

First, efforts to convince the Board to modify its position can be continued. If full elimination of the new requirement isn't supported, perhaps the Board can be persuaded to designate the fifth year as a practice year rather than a training year, so that the Medicare billing option isn't lost. Other boards, such as those for orthopaedics and anesthesia, require physicians to practice for one or two years after completing residency training before becoming eligible to take the certifying examination. Since the additional experience is designated a practice year rather than a training year under this option, Medicare billing is not precluded. Such a requirement for pathology may fulfill the Board's goal, while also contributing to the financial feasibility of the new fifth-year requirement. It should be noted that the ability to fund the fifth year from professional fee earnings assumes that the trainee will be performing the specific clinical functions for which Medicare will permit Part B billing under its revised regulations. Since the goal of the fifth year is clinical experience, this should not be an unrealistic assumption.

Alternatively, an effort could be made to persuade the Board to count the fifth year toward both basic and special competency certification if the fifth year of training is appropriately structured to meet the objectives of both programs. This could eliminate the need for the 170 residents now seeking special competency certification to pursue one of the additional required years of training, thereby reducing the added cost of the fifth year by $7.7 million.

If the Board's current interpretation of the fifth-year requirement becomes final and the $21.3 million in additional program support cannot be obtained, then a second ultimate option remains, and that is to reduce program size. To effectuate this option, programs obviously will need to begin now to plan for reducing the number of entry level positions beginning on July 1, 1985.

Summary

Of the approximately 635 residents in each year of pathology training, about 165 are already meeting the Pathology Board's proposed requirement for a fifth year of resident training. The cost of accommodating the other 470 residents for a fifth year of training is estimated to be $21.3 million.

To avoid the cost of this additional year of training, pathology programs could require all residents to complete a year of residency prior to admission to a pathology program, or programs could reduce the number of residents and fellows to offset the added cost of the fifth year. However, both of these options could have a detrimental effect on the overall quality of pathology training.

Possible sources of funding for the additional year of pathology training are patient revenues from professional fee earnings within pathology departments and payments from hospital revenues. However, Medicare law precludes professional fee billing by physicians enrolled in approved training programs, and the prevailing level of competition for patients will make it unlikely that many pathology departments will have the needed additional workload to generate adequate professional fee income to support another year of pathology training. In addition, continued governmental support for residency training programs is in question and is being significantly complicated by the new era of prospective payment for patient care. The Medicare Prospective Payment System and its averaging concept embodied in Diagnostic Related Groups leaves teaching hospitals vulnerable because of the system's inadequacies in recognizing costs incurred by teaching hospitals in providing societal goods beyond patient care and, secondly, because of the wide disparities among teaching hospitals in basic operating parameters.

For these reasons, it is likely that, in some instances, support for the fifth year of training will be found through the reallocation of existing resources, unless the Board modifies its position through (1) elimination of the new requirement, (2) designation of the fifth year as a practice year rather than a training year to enable fifth year trainees to continue Medicare billing, or (3) by providing credit for the fifth year of training toward both basic and special competency certification. Should the Board's present interpretation of the fifth year requirement remain unchanged, then the second option, reduction in residency and fellowship program size, remains as the ultimate feasible alternative.

Footnotes

1. The eight teaching hospitals in the survey were selected from a group of hospitals with which the University of Iowa Hospitals and Clinics routinely shares data. A total of 131.5 residents are currently training in the eight pathology residency programs at these hospitals and thus represent slightly more than five percent of all pathology residents. The survey data and the extrapolations based on this data are very likely conservative since the reported house staff stipends and benefits are consistent with nationwide averages; costs of faculty contributions are likely to be lower for this group of hospitals than in centers in which faculty compensation is more heavily influenced by the level of compensation of private practice physicians; and other costs associated with the programs in the survey reflect residency training economies of scale achieved by the large programs composing the sample.

2. This estimate is based on the assumption that the percentage of positions filled in pathology residency programs in 1983-84 is the same as the 1982-83 percentage as derived from data presented in the American Medical Association, 1983-84 Directory of Residency Training Programs (Chicago: American Medical Association, 1983), pp. 79-80.

3. Ibid., p. 78.

4. Based on the survey of eight pathology residency programs at major teaching hospitals, it was found that approximately 20.7 percent of the pathology residents had at least one year of graduate medical education which would fulfill the fifth-year requirement prior to entering pathology.

5. This estimate was derived from a review of descriptions for all programs not leading to special competency certification listed in the "Training in Specialized Areas of Pathology" section of the Intersociety Committee on Pathology Information, Inc. Directory of Pathology Training Programs: Anatomic, Clinical, Specialized, 1984-85 (Bethesda, Maryland: Intersociety Committee on Pathology Information, 1983), pp. 407-475. When the program description did not satisfactorily indicate the number of fellows in training, the programs were contacted by phone to verify the information in the description and to obtain data on the number of fellows in training. It is recognized that the Directory may not list all possible fellowships which provide training in a specialized area of pathology not leading to special competency certification, but it is the most complete source for obtaining such information.

6. American Medical Association, 1983-84 Directory of Residency Training Programs, p. 87.

7. Ibid., p. 80.

8. Ibid., p. 472.

9. Ibid., p. 472.

10. National Resident Matching Program, 1983 Results, (Evanston, Illinois: National Resident Matching Program, March 1983), p. ii; and telephone communication with staff at National Resident Matching Program Office, September 1983.

11. John W. Colloton, "Responding to Change in Order to Prosper," presented to "The Medicare Prospective Payment System: Implications for Teaching Hospitals and Colleges of Medicine," sponsored by the Associaton of American Medical Colleges, Houston, Texas, June 8-10, 1983.

12. The Social Security Amendments of 1983, Public Law No. 98-21, §601.

13. John W. Colloton, "Competition: The Threat to Teaching Hospitals," in Duncan Yaggy and William G. Anlyan, editors, Financing Health Care: Competition Versus Regulation (Ballinger Publishing Company, Cambridge, Massachusetts, 1982).

14. John W. Colloton, "Responding to Change in Order to Prosper."

15. United States Senate, Senate Report No. 92-23, p. 52.

16. John W. Colloton, "Responding to Change in Order to Prosper."

17. Remarks of Alice Rivlin, Ph.D., Congressional Budget Office Director, reported in "Capital Financing, Medicare Funding are Top Congressional Priorities," Hospitals, (May 16, 1983), p. 32.

18. The Blue Sheet 26 (Chevy Chase, Maryland: Drug Research Reports, August 31, 1983), pp. 3-4.

ESTIMATED COST OF PATHOLOGY RESIDENCY TRAINING

IN THE UNITED STATES

1983

Estimated Annual Cost of Training One Pathology Resident*..................	$ 45,500
Current Number of Pathology Residents**..................................	2,550
TOTAL ESTIMATED COST OF PATHOLOGY RESIDENCY TRAINING IN THE UNITED STATES - 1983..	$116 Million

*Based on phone survey of 8 Pathology Residency Programs by University of Iowa Hospitals and Clinics staff in August and September, 1983.

**Derived from 1983 national data on the number of Pathology Residency positions and the proportion of positions actually filled in 1982.

FINANCIAL IMPACT OF FIFTH-YEAR REQUIREMENT ON PATHOLOGY RESIDENCY TRAINING PROGRAMS

(1983 Dollars)

Status in 1983	Number of Residents Per Year	Added Annual Cost For Fifth Year (millions)
• RESIDENTS TAKING YEAR OF TRAINING BEFORE PATHOLOGY RESIDENCY	130	$ 0
• RESIDENTS TAKING EXTRA YEAR(S) AFTER PATHOLOGY RESIDENCY		
- NOT FOR CERTIFICATION	35	0
- FOR CERTIFICATION (WITHOUT ACCREDITATION)	40	1.8
- FOR CERTIFICATION (WITH ACCREDITATION)	130	5.9
• RESIDENTS NOT CURRENTLY TAKING FIFTH YEAR	300	13.6
TOTALS	635	$ 21.3

OPTIONS TO AVOID ADDED COST OF FIFTH-YEAR REQUIREMENT

- REQUIRE RESIDENTS TO COMPLETE ONE YEAR OF TRAINING BEFORE ADMISSION TO PATHOLOGY PROGRAM.*
- REDUCE THE NUMBER OF PATHOLOGY RESIDENTS IN EACH YEAR OF TRAINING, POSSIBLY INCLUDING SOME SUBSPECIALTY FELLOWSHIP TRAINING POSITIONS.

* Assumes funded positions will be available.

FINANCIAL NEEDS OF 270 COTH MEMBERS WITH MAJOR COLLEGE OF MEDICINE AFFILIATIONS

(projected from Iowa Survey data of 20 university owned COTH members)
($20.2 Billion-Fiscal 1981)

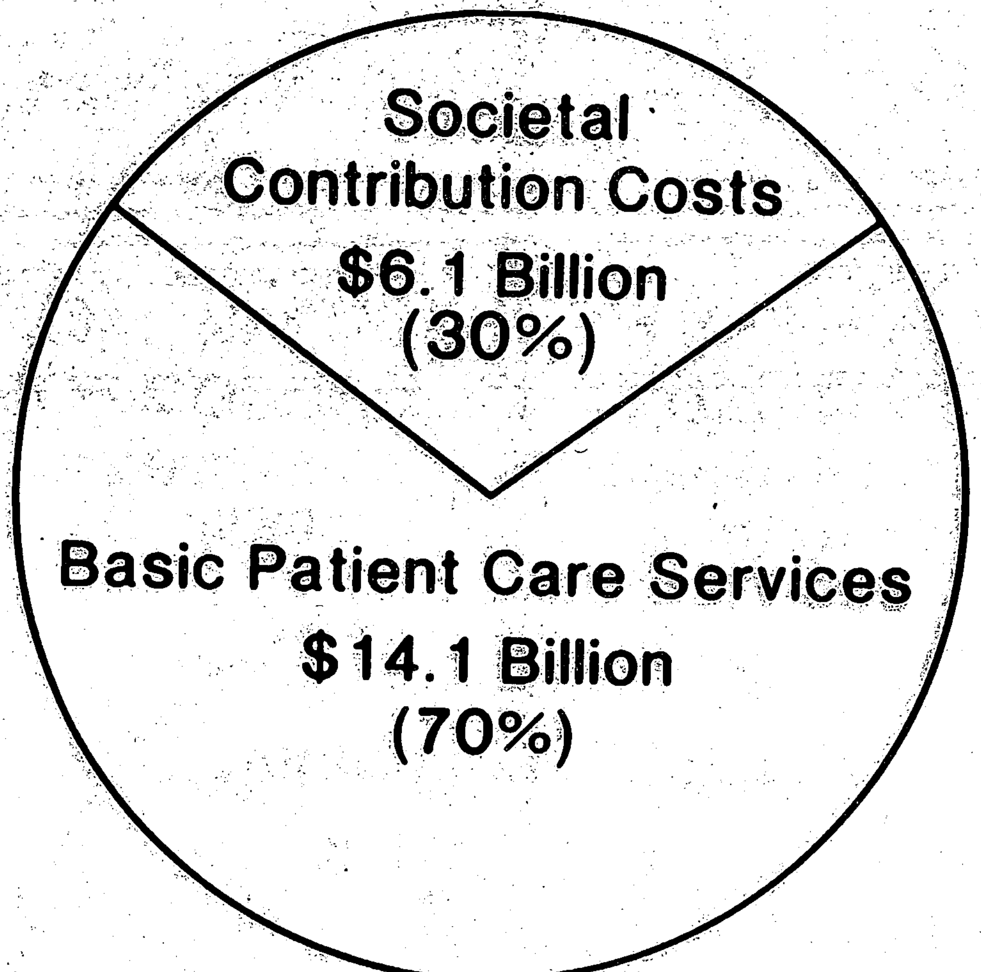
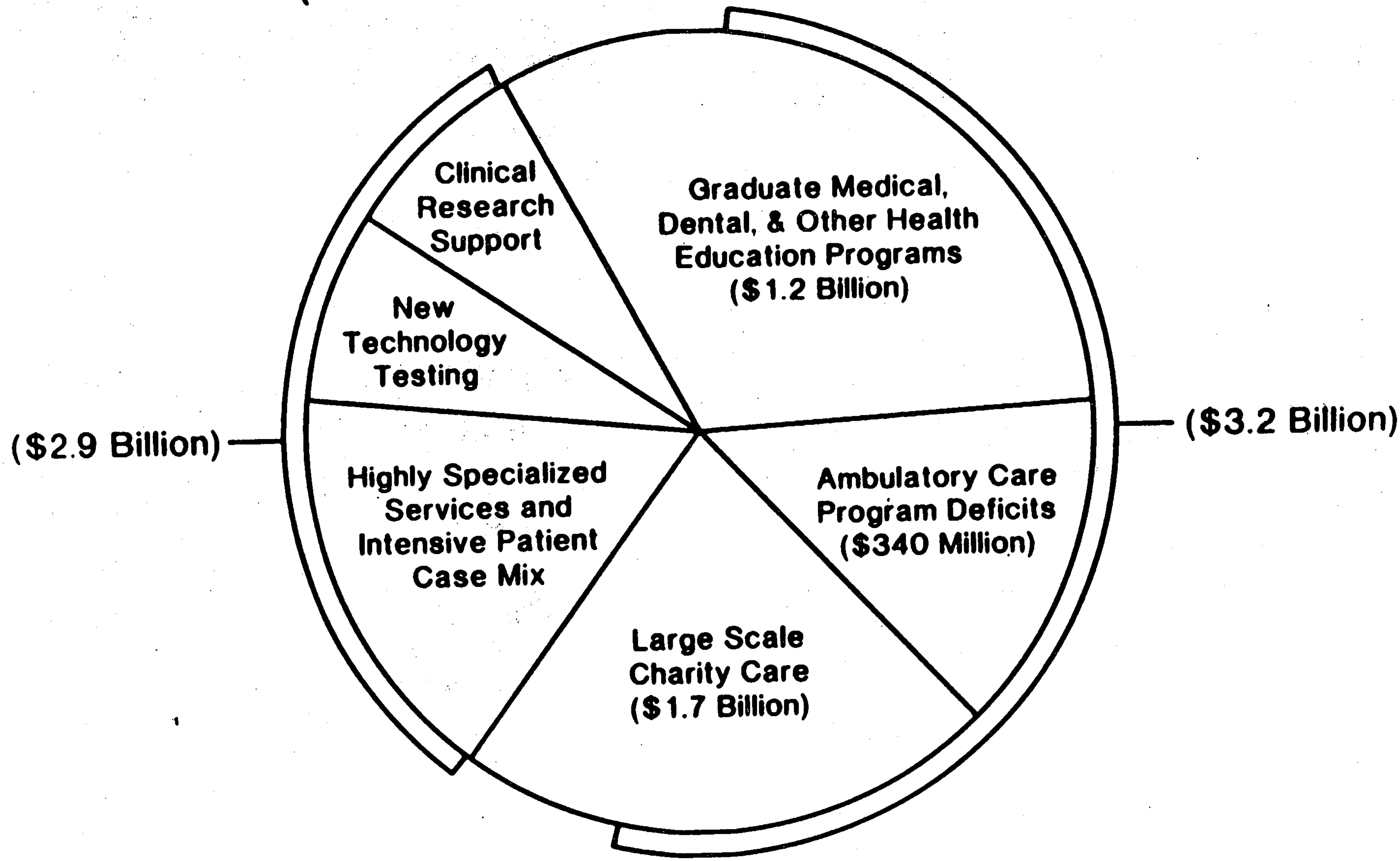


EXHIBIT V

SOCIETAL CONTRIBUTIONS OF TEACHING HOSPITALS
($6.1 Billion Annual Cost-Fiscal 1981)



ESTIMATED COSTS AND PAYMENTS FOR SOCIETAL CONTRIBUTIONS OF 270 COTH MEMBERS WITH MAJOR COLLEGE OF MEDICINE AFFILIATIONS UNDER MEDICARE DRG PAYMENT SYSTEM

(MILLIONS OF 1981 DOLLARS)

Societal Contribution Payment Element	Total Cost	Medicare Portion (32%)		Other Payors Portion (68%)		Shortfall
		Cost	Payment	Cost	Payment	
• Direct Educational Cost-Based Payment	$1,200	$ 384	$ 384	$ 816	$ 816	$ 0
• Indirect Educational Cost Payment - Proxy for all other societal contributions	4,922	1,575	1,255*	3,347	3,347**	(320)
TOTAL	$6,122	$1,959	$1,639	$4,163	$4,163	($320)

* Estimated on the basis of the 1981 study of 270 COTH Hospitals by the University of Iowa Hospitals & Clinics and additional data from the COTH Directory.

** Assumes full payment by "other payors" and no shifting of Medicare indirect education cost shortfall to payors.

EXHIBIT VII

NATIONAL COUNCIL OF TEACHING HOSPITALS STUDY, PUBLISHED APRIL, 1983
COMPARATIVE NUMBER OF STAFF PER OCCUPIED BED BY HOSPITAL (F.Y. 1981)

First Quartile	1.	8.93
	2.	8.70
	3.	8.46
	4.	8.39
	5.	8.36
	6.	8.28
	7.	8.27
	8.	8.15
	9.	8.08
	10.	7.64
	11.	7.47
	12.	7.11
	13.	6.88
	14.	6.78
	15.	6.75
	16.	6.73
Second Quartile	17.	6.72
	18.	6.72
	19.	6.70
	20.	6.59
	21.	6.59
	22.	6.59
	23.	6.54
	24.	6.51
	25.	6.48
	26.	6.35
	27.	6.34
	28.	6.32
	29	6.29
	30.	6.24
	31.	6.22
	32.	6.10
MEDIAN		
Third Quartile	33.	6.04
	34.	6.00
	35.	5.92
	36.	5.85
	37.	5.82
	38	5.74
	39.	5.69
	40.	5.59
	41.	5.54
	42.	5.45
	43.	5.33
	44.	5.32
	45.	5.25
	46.	5.19
	47	5.18
	48.	5.12
Fourth Quartile	49.	5.12
	50.	5.00
	51.	4.95
	52.	4.90
	53.	4.83
	54	4.83
	55.	4.80
	56.	4.80
	57.	4.80
	58.	4.76
	59.	4.69
	60.	4.68
	61	4.61
	62.	4.10
	63.	4.08
	64.	4.00

NATIONAL COUNCIL OF TEACHING HOSPITALS STUDY, PUBLISHED APRIL, 1983
AVERAGE EXPENSE PER ADMISSION BY HOSPITAL (F.Y. 1981)

Quartile	Hospital	Expense
First Quartile	1.	$ 6,886
	2.	5,765
	3.	5,382
	4.	5,353
	5.	5,142
	6.	5,091
	7.	4,931
	8.	4,837
	9.	4,593
	10.	4,577
	11.	4,570
	12.	4,548
	13.	4,463
	14.	4,445
	15.	4,400
	16.	4,376
Second Quartile	17.	$ 4,346
	18.	4,345
	19.	4,318
	20.	4,289
	21.	4,243
	22.	4,236
	23.	4,138
	24.	4,092
	25.	4,083
	26.	4,066
	27.	3,989
	28.	3,919
	29.	3,852
	30.	3,828
	31.	3,824
MEDIAN →	32.	3,786

Quartile	Hospital	Expense
Third Quartile	33.	$ 3,782
	34.	3,732
	35.	3,730
	36.	3,722
	37.	3,705
	38.	3,640
	39.	3,578
	40.	3,497
	41.	3,436
	42.	3,419
	43.	3,405
	44.	3,371
	45.	3,248
	46.	3,229
	47.	3,111
	48.	3,051
Fourth Quartile	49.	$ 3,039
	50.	3,026
	51.	3,024
	52.	3,016
	53.	2,938
	54.	2,896
	55.	2,644
	56.	2,626
	57.	2,536
	58.	2,346
	59.	2,251
	60.	2,159
	61.	2,115
	62.	2,101
	63.	2,025
	64.	1,935

EXHIBIT IX

NATIONAL COUNCIL OF TEACHING HOSPITALS STUDY, PUBLISHED APRIL, 1983
COST PER DAY FOR INPATIENT SERVICES BY HOSPITAL (F.Y. 1981)

First Quartile	1.	$ 751
	2.	687
	3.	664
	4.	658
	5.	594
	6.	580
	7.	562
	8.	555
	9.	551
	10.	507
	11.	503
	12.	502
	13.	495
	14.	485
	15	480
	16.	479
Second Quartile	17.	$ 478
	18.	465
	19.	463
	20.	459
	21.	457
	22.	451
	23	447
	24.	440
	25.	439
	26.	435
	27	434
	28.	433
	29	432
	30.	429
	31.	428
MEDIAN	32.	426
Third Quartile	33.	$ 425
	34.	417
	35.	409
	36.	409
	37.	407
	38	403
	39.	400
	40.	396
	41.	395
	42.	385
	43.	373
	44.	372
	45.	367
	46.	362
	47.	360
	48.	355
Fourth Quartile	49.	$ 355
	50.	354
	51.	351
	52.	346
	53.	343
	54.	341
	55	337
	56.	335
	57.	324
	58.	321
	59.	317
	60.	305
	61	297
	62.	269
	63.	245
	64.	233

EXHIBIT X

NATIONAL COUNCIL OF TEACHING HOSPITALS STUDY, PUBLISHED APRIL, 1983
NON-PAYROLL EXPENSE PER OCCUPIED BED BY HOSPITAL (F.Y. 1981)

Quartile	Hospital	Expense
First Quartile	1.	$ 254.525
	2.	144.365
	3.	129.188
	4.	127.284
	5.	125.301
	6.	117.284
	7.	112.099
	8.	109.942
	9.	106.561
	10.	105.686
	11.	105.192
	12.	104.876
	13.	104.863
	14.	100.947
	15.	98.890
	16.	98.535
Second Quartile	17.	$ 97.679
	18.	97.494
	19.	97.467
	20.	97.454
	21.	94.599
	22.	92.744
	23.	88.991
	24.	88.608
	25.	87.707
	26.	87.633
	27.	85.684
	28.	84.366
	29.	84.093
	30.	83.822
	31.	83.187
MEDIAN	32.	81.667
Third Quartile	33	$ 81 369
	34	80 820
	35	78 670
	36	77 836
	37	77 750
	38	74 831
	39	74 047
	40	73 924
	41	72 765
	42	72 708
	43	71 777
	44	69 272
	45	68 686
	46	68 453
	47	68 453
	48	65 575
Fourth Quartile	49	$ 61 655
	50	60 909
	51	60 741
	52	60 545
	53	59 699
	54	58 046
	55	57 181
	56	56 899
	57	54 587
	58	54 035
	59	53 191
	60	51 910
	61	51 686
	62	49 174
	63	43 156
	64	35 403

EXHIBIT XI

NATIONAL COUNCIL OF TEACHING HOSPITALS STUDY, PUBLISHED APRIL, 1983
AVERAGE LENGTH OF STAY BY HOSPITAL (F.Y. 1981)

Quartile	Hospital	Average Length of Stay
First Quartile	1.	11.96
	2.	11.29
	3.	11.19
	4.	10.96
	5.	10.95
	6.	10.60
	7.	10.58
	8.	10.34
	9.	10.34
	10.	10.33
	11.	10.10
	12.	10.05
	13.	10.02
	14.	10.00
	15.	9.84
	16.	9.79
Second Quartile	17.	9.70
	18.	9.69
	19.	9.60
	20.	9.56
	21.	9.50
	22.	9.42
	23.	9.40
	24.	9.37
	25.	9.37
	26.	9.37
	27.	9.20
	28.	9.13
	29.	9.11
	30.	9.10
	31.	8.90
MEDIAN →	32.	8.82
Third Quartile	33.	8.81
	34.	8.80
	35.	8.80
	36.	8.69
	37.	8.63
	38.	8.60
	39.	8.51
	40.	8.51
	41.	8.49
	42.	8.46
	43.	8.46
	44.	8.19
	45.	8.16
	46.	8.15
	47.	8.08
	48.	7.90
Fourth Quartile	49.	7.80
	50.	7.77
	51.	7.75
	52.	7.56
	53.	7.42
	54.	7.40
	55.	7.32
	56.	7.22
	57.	6.90
	58.	6.80
	59.	6.70
	60.	6.67
	61.	6.63
	62.	6.58
	63.	6.40
	64.	6.30

EXHIBIT XII

OPTIONS FOR RESPONDING TO FIFTH-YEAR REQUIREMENT

Present

- CONVICE BOARD TO MODIFY ITS POSITION BY:
  - DROPPING REQUIREMENT, OR
  - CONVERTING REQUIREMENT TO PRACTICE YEAR RATHER THAN TRAINING YEAR, OR
  - ALLOWING FIFTH YEAR, IN GIVEN CIRCUMSTANCES, TO COUNT TOWARD BOTH BASIC AND SPECIAL COMPETENCY CERTIFICATION.

ULTIMATE

- FIND $21.3 MILLION IN ADDITIONAL PROGRAM SUPPORT, OR
- REDUCE THE NUMBER OF PATHOLOGY RESIDENTS AND/OR FELLOWS IN EACH YEAR OF TRAINING.

SUGGESTED CHANGES TO THE PAPER ENTITLED, "NEW CHALLENGES FOR THE COUNCIL OF TEACHING HOSIPTALS AND THE DEPARTMENT OF TEACHING HOSPITALS"

A. Delete the word "Major" on page 25, lines 4 and 6.

B. The following section should be inserted on page 29 under the heading COTH MEMBERSHIP:

There are two categories of COTH membership: teaching hospital membership and corresponding membership. Both membership categories require the applicant institution to have a documented affiliation agreement with a medical school accredited by the Liaison Committee on Medical Education and a letter recommending membership from the dean of the affiliated medical school.

Teaching hospital membership is limited to not-for-profit-- IRS 501(C)(3)--and publicly-owned hospitals which sponsor or significantly participate in, at least four approved, active residency programs. At least two of the approved residency programs must be in the following specialty areas: internal medicine, surgery, obstetrics-gynecology, pediatrics, family practice or psychiatry. Other considerations evaluated in determining a hospital's participation in medical education activities are:

- o The availability and activity of undergraduate clerkships;
- o the presence of full-time chiefs of service or a director of medical education;
- o the number of internship and residency positions in relation to bed size, and the proportion (in full-time equivalents) which are filled by foreign medical graduates;
- o the significance of the hospital's educational programs to the affiliated medical school and the degree of the medical school's involvement in them; and
- o the significance of the hospital's financial support of medical education.

In the case of specialty hospitals--such as children's, rehabilitation and psychiatric institutions--the COTH Administrative Boad is authorized to make exceptions to the requirement of four residency programs provided that the specialty hospital meets the membership criteria within the framework of the specialized objectives of the hospital.

Teaching hospital members receive the full range of AAMC and Council services and publications. In addition, their COTH representatives are eligible to participate in the AAMC's governance, organization and committee structure.

Non-profit and governmental hospitals and medical education organizations (e.g., consortia, foundations, federations) not eligible for teaching hospital membership may apply for corresponding membership. To be eligible for corresponding membership an organization must have a demonstrated interest in medical education, a documented affiliation agreement with a medical school accredited by the LCME, and a letter recommending membership from the dean of the affiliated school. Corresponding members are eligible to attend all open AAMC and COTH meetings and receive all publications. Representations of corresponding members are not eligible to participate in the governance of the AAMC. Hospitals which are eligible for teaching hospital membership are not eligible for corresponding membership. There are currently 35 corresponding members of COTH.

C. The classification of COTH members on pages 29 and 30 should be deleted and set forth as follows:

<u>Teaching Hospital Relationships With The College of Medicine</u>

	Number of Members	Percent
1. Common ownership with the college of medicine	64	15%
2. Separate non-profit hospitals where the majority of the medical school department chairmen and the hospital chiefs of service are the same person	28	7%
3. Public hospitals where the majority of the medical school department chairmen and the hospital chiefs of service are the same person	23	6%
4. Affiliated hospitals not otherwise classified which are designated by the medical school dean as a major affiliate for the school's clinical clerkship program*	152	37%
5. Affiliated hospitals not otherwise classified which are designated by the medical school dean as a limited affiliate for the school's clinical clerkship program*	44	11%
6. Specialty hospital	27	7%
7. Veterans Administration hospitals	74	19%

(*Source: 1983-84 Directory of Institutions and Agencies Participating in Residency Training, Accreditation Council For Graduate Medical Education, pp. 351-421.)

D. The statement on page 30 referencing Appendix A should be omitted, and Appendix A should be deleted, pages 51-75.

E. The first paragraph on page 31 should be re-written beginning with the third sentence as follows:

TABLE II shows that when the geographic distribution of the initial three categories of member hospitals set forth on page 29 is analyzed, nine states account for a majority of members, and only Michigan drops out of the group. Of the 127 accredited U.S. medical schools, 107 have a relationship with a teaching hospital in the initial three categories listed on page 29. Three schools have a relationship with a hospital in one of these three categories, but the hospital has not elected to become a COTH member. Humana Hospital University, related to the University of Louisville School of Medicine, is ineligible to join COTH under current membership criteria. In 16 medical schools, the majority of medical school chairmen of clinical departments are not hospital chiefs of service in one particular teaching hospital.

F. Prior to the summary paragraph on page 31, the following statement should be inserted.

This categorization of the Council of Teaching Hospitals portrays the membership as it currently exists. It should be understood that teaching hospital/medical school relationships are continually evolving. Hospitals affiliated with newer medical education programs will mature and become more closely integrated and longstanding hospital relationships with medical schools may change in character. In addition a recent survey reveals that 14 medical schools have stated that they have an affiliation relationship with an investor-owned hospital or health delivery organization.

G. The heading on TABLE II, page 33, should be changed to read, "Distribution of the Initial Three Membership Categories by State." The heading on the first column should be changed to read, "Number of Hospitals in Initial Three Membership Categories." In addition, a footnote should be added stating, "These categories are set forth on page 29."

H. TABLE III should be deleted; TABLE IV then becomes TABLE III.

I. The following points should be added to the list on page 36:

- The American Hospital Association has established constituency centers, including one for "metropolitan hospitals," in which teaching hospitals have a very significant role as members and officers;

- The Catholic Health Association has reorganized and substantially strengthened its Washington office.

J. The third paragraph on page 40 should be reworded after the underlined sentence as follows:

a segment of the membership

In particular, ~~some large, private hospitals~~, which view themselves as the institutions which teach the teachers and support major research programs, on occasion express the view that their unique contributions and problems are not fully articulated. They and some of their colleagues seem to feel the rest of the COTH constituency dilutes their message. When asked specifically to show how the diverse constituency has diluted or changed the AAMC objectives, the response has not been helpful. At the same time, other segments of the COTH constituency seem to believe the organization is dominated by the ~~large, private, traditional teaching hospitals~~. by the aforementioned groups of members.

K. In the first line on page 41, the words "would have" should be substituted for "has."

L. The second sentence on page 46 should be changed to read as follows:

A number of COTH and AAMC members believe, however, that they would be better served if the AAMC perceived its role as advocating the particular needs of only a limited group of teaching hspitals (i.e., the first three membership categories set forth on page 29).

Delete staff opinion on p. 46.

QUOTATIONS FROM THE REPORT OF THE AAMC COMMISSION ON MEDICAL EDUCATION

Published in 1932

The Commission has believed from the beginning that an emphasis on educational principles in medical training and licensure can be secured only by modifying the point of view and broadening the interests of those responsible for medical education and licensure, not by recommendations, statistics, new regulations, further legislation, or manipulation of the curriculum.

The present concept aims to develop sound habits as well as methods of independent study and thought which will equip the student to continue his self-education throughout life. This can be brought about only by freeing medical education from some of its present rigidity, uniformity, and overcrowding and by articulating it more closely with the educational needs of the student. These considerations are very likely to modify in some degree the selection of medical students and what is expected of premedical education.

The medical course can not produce a physician. It can only provide the opportunities for a student to secure an elementary knowledge of the medical sciences and their application to health problems, a training in the methods and spirit of scientific inquiry, and the inspiration and point of view which come from association with those who are devoting themselves to education, research, and practice.

Medicine must be learned by the student, for only a fraction of it can be taught by the faculty. The latter makes the essential contributions of guidance, inspiration, and leadership in learning. The student and the teacher, not the curriculum, are the crucial elements in the educational program.

...the almost frantic attempts to put into the medical course teaching in all phases of scientific and medical knowledge, and the tenacity with which traditional features of teaching are retained have been responsible for great rigidity, overcrowding, and a lack of proper balance in the training. Attempts to correct the difficulties have been largely directed toward rearrangements of the curriculum.

In medical education, as in other forms of education, attention should be directed more to the development of the individual student than to details of the curriculum.

There has been a tendency in recent years to attempt to provide instruction in the medical course in the various special fields of practice. This has been responsible in part for the great overburdening of the curriculum and the confusion regarding the purposes of the basic training.

The medical course, partly because of the requirements for licensure, has been concerned more with the factual matter a student had memorized at the time of graduation than with the development of intellectual resourcefulness and sound habits and methods of study. Too great an emphasis has been placed on description and the memorizing of many details and facts which, though they are of little permanent significance, are of immediate value in passing the examinations and in meeting the requirements of licensure to practice.

At the present time it is probably true that mastery of the clinical subjects and ability to teach are not sufficiently considered in the selection of the personnel of some faculties, and little attention is paid to the preparation of medical teachers in the art of teaching. The great emphasis in selection is placed upon ability and interest in, or willingness to do, research, in which outstanding ability is rare. Too much emphasis is placed upon this single requirement, important as it is.

If clinical teaching is to attract and hold teachers of the caliber and ability which it requires, and provide a corps of younger instructors from which the senior members of the staff may be recruited, there must be a fuller recognition of the freedom and dignity which such work should command. Teachers of clinical medicine should not be subject to any restrictions or regulations beyond those imposed upon teachers in other fields of academic work, so far as their university relationships are concerned. The responsibilities for the care and treatment of patients in the hospital and clinics introduce features unknown in other university fields, and place heavy demands upon the clinical teachers, in addition to those which the university position imposes.

Consensus for Change

Proposals that are perceived to have merit and are supported by 7 in 10 or more in all or nearly all the groups interviewed include:

--Placing greater emphasis on teaching through problem-solving;

--Providing explicit opportunities for students to develop skills of critical analysis of medical literature;

--Providing explicit incentives for faculty who make an extensive commitment to the education of medical students;

--Developing a system for evaluating effective teaching by the medical school faculty;

--Using teaching evaluation as a significant factor in tenure decisions;

--Providing greater opportunity for personal contact between students and faculty; and

--In clinical education: requiring periodic faculty evaluations of students' ability to conduct interviews and physicals; specifying residents' teaching responsibilities and evaluating their performance as teachers; and generally increasing the involvement of faculty in the education, supervision, and evaluation of medical students.

CHALLENGES FOR IMPROVING MEDICAL STUDENTS' GENERAL PROFESSIONAL EDUCATION

I. For Students

A. Becoming active independent learners who are capable of problem-solving

B. Reducing dependence on passive modes of learning in college and medical school

C. Reducing dependence upon norm referenced examinations for motivation

D. Organizing time for independent learning

E. Acquiring critical, analytical skills

F. Gaining basic clinical skills

G. Restraining premature specialization

II. For Faculty Members

A. Learning to be mentors who guide students in learning rather than being reservoirs of factual information

B. Gaining the abilities to make subjective judgments of students' performance

C. Having the time to become involved in the general professional education of medical students

III. For Administrators

A. Lodging the responsibility for planning, implementing, and supervising the general professional education of medical students with an interdisciplinary, interdepartmental faculty group that has the authority and the resources to accomplish the mission.

B. Instituting a program to train faculty members to be mentors and guides

C. Identifying and developing clerkship settings appropriate for the initial clinical education of medical students

D. Implementing a student evaluation system that ensures the evaluation of skills as well as cognitive knowledge

E. Establishing a system of long-term tracking to determine whether institutional educational goals are accomplished

F. Setting a tone that assures faculty members that significant involvement with the general professional education of medical students will be recognized

G. Working with graduate program directors to eliminate pressures on medical students that impair their attainment of a general professional education

Table

U.S. and Canadian Medical Schools

According to Total Scheduled Hours Per Week During Year 01

(N= 129)*

Medical School	Hours
U of Ill-Urbana	16
Laval Univ	20
Hawaii	20
Yale	21
New York Med	21
Cincinnati	22
Northwestern	22
Hahnemann	22
Kentucky	22
Kansas	22
Queen's Univ	23
Rush	23
Wright State	23
East Carolina	23
North Carolina	24
U of Ill-Chicago	24
Texas Tech	24
Case Western Res	24
Mississippi	24
Albert Einstein	24
U of Sherbrooke	24
LSU-New Orleans	24
Texas-San Antonio	24
Texas-Houston	25
Nebraska	25
U Western Ontario	25
Arizona	25
Loyola	25
Columbia	25
Brown	26
Med U So Carolina	26
Mount Sinai	26
Texas A & M Univ	26
Medical Col Penn	26
Emory	27
U Montreal	27
U Pennsylvania	27
U Chicago-Pritzker	27
Creighton	27
Cornell	27
Wayne State	27
Chicago Medical	27
Wash U St Louis	27
Massachusetts	27
Marshall	28
Tennessee	28
Iowa	28
Indiana	28
Albany	28
U of Michigan	28
U Wash-Seattle	28
U Toronto	28
Jefferson	28
Rochester	28
Univ SC Columbia	28
Texas-Dallas	28
SUNY-Downstate	28
Minn-Minneapolis	28
Texas-Galveston	28
UMDNJ-Rutgers	28
Bowman Gray	28
Med Col Virginia	28
SUNY-Stony Brook	28
U Calgary	28
Arkansas	29
U Ottawa	29
West Virginia	29
U Brit Columbia	29
Colorado	29
Oral Roberts	29
Med Col of Georgia	29
Oregon	29
Louisville	29
Temple	29
Univ of Virginia	29
Tulane	29
Georgetown	29
Baylor	30
Univ of Vermont	30
Michigan State	30
Florida	30
Calif Davis	30
Penn State	30
U Alberta	30
Miami	30
New York University	30
East Tennessee	30
Nevada	30
Oklahoma	30
Med Col Wisconsin	30
Ponce Sch of Med	30
Med Col of Ohio	30
North Dakota	30
South Florida	30
Morehouse	30
Ala-Birmingham	30
Minnesota-Duluth	30
Mayo Medical	30
Missouri Columbia	31
St Louis U	31
UMDNJ-New Jersey	31
Southern Calif	31
Dalhousie U	31
Utah	32
Calif San Fran	32
Boston University	32
Calif Los Angeles	32
South Alabama	32
Meharry Med	32
Connecticut	32
Dartmouth	32
Uniformed Services	32
McGill Univ	32
Johns Hopkins	33
Northeastern Ohio	33
SUNY-Buffalo	33
Ohio State Univ	33
George Washington	34
SUNY-Upstate	35
Univ Del Caribe	35
Calif San Diego	36
South Dakota	36
U Wisconsin	36
LSU-Shreveport	36
Pittsburgh	36
Puerto Rico	36
Duke University	36
Maryland	37
U Saskatchewan	38

*Comparable data are not available for 14 schools.
Source: AAMC 1983-1984 Curriculum Directory.

Table

U.S. and Canadian Medical Schools

According to Scheduled Hours Per Week During Year 02

(N= 124)*

Medical School	Hours
U Chicago-Pritzker	15
Laval Univ	16
Hawaii	20
New York Med	21
Northwestern	21
George Washington	21
Hahnemann	22
Wright State	22
Texas-Houston	23
Cincinnati	24
Kentucky	24
Texas-San Antonio	24
Nebraska	24
Wayne State	24
Oregon	24
U of Ill-Urbana	25
Kansas	25
Rush	25
Arizona	25
Loyola	25
Medical Col Penn	25
Chicago Medical	25
U Wash-Seattle	25
SUNY-Stony Brook	25
Georgetown	25
Penn State	25
SUNY-Buffalo	25
Albert Einstein	26
Brown	26
Med U So Carolina	26
Wash U St Louis	26
Yale	27
East Carolina	27
Texas Tech	27
LSU-New Orleans	27
U Montreal	27
Massachusetts	27
Jefferson	27
Rochester	27
Texas-Galveston	27
Med Col Virginia	27
Oklahoma	27
North Carolina	28
Case Western Reserve	28
Mississippi	28
U Western Ontario	28
Columbia	28
Tennessee	28
Indiana	28
Albany	28
U Toronto	28
Univ SC Columbia	28
Texas-Dallas	28
Minn-Minneapolis	28
U Calgary	28
Colorado	28
Temple	28
St. Louis U	28
Mount Sinai	29
Texas A & M Univ	29
Creighton	29
Cornell	29
Marshall	29
Bowman Gray	29
U Ottawa	29
Louisville	29
Univ of Virginia	29
Tulane	29
Queen's Univ	30
U Sherbrooke	30
Emory	30
Arkansas	30
West Virginia	30
Oral Roberts	30
Michigan State	30
Florida	30
U Alberta	30
Miami	30
New York University	30
East Tennessee	30
Nevada	30
Med Col Wisconsin	30
Ponce Sch of Med	30
Med Col of Ohio	30
North Dakota	30
South Florida	30
Morehouse	30
Minnesota-Duluth	30
Ohio State Univ	30
Iowa	31
UMDNJ-Rutgers	31
U of Michigan	32
SUNY-Downstate	32
U Brit Columbia	32
Missouri Columbia	32
UMDNJ-New Jersey	32
Dalhousie U	32
Calif San Fran	32
Boston University	32
Calif Los Angeles	32
South Alabama	32
Meharry Med	32
Connecticut	32
Dartmouth	32
Uniformed Services	32
Univ Del Caribe	32
Maryland	32
U Pennsylvania	33
Med Col of Georgia	33
Utah	33
Johns Hopkins	33
U Wisconsin	34
Calif Davis	35
SUNY-Upstate	35
Pittsburgh	35
Southern Calif	36
Northeastern Ohio	36
Calif San Diego	36
South Dakota	36
LSU-Shreveport	36
Puerto Rico	36
U Saskatchewan	38

*Comparable data are not available for 19 schools.
Source: AAMC 1983-1984 Curriculum Directory

Table 3

U.S. and Canadian Medical Schools

According to Total Scheduled Lecture Hours in Preclinical Curriculum

(N= 123)*

Medical School	Hours
U Vermont	519
Duke University	561
U of Ill-Urbana	598
Brown	671
Mayo Medical	687
Johns Hopkins	709
Cornell	717
Calif Los Angeles	723
Mississippi	723
Indiana	725
Columbia	728
Arkansas	729
U Chicago-Pritzker	730
U Pennsylvania	735
SUNY-Downstate	742
Queen's Univ	771
Chicago Medical	778
Wayne State	783
Emory	785
Albert Einstein	786
Colorado	788
UMDNJ-Rutgers	788
Kansas	789
Florida	796
SUNY-Upstate	797
Northwestern	798
U of Ill-Chicago	802
U Toronto	808
Rochester	813
Massachusetts	816
Cincinnati	819
Rush	825
LSU-New Orleans	826
New York University	834
Morehouse	843
Ponce Sch of Med	846
Iowa	854
Miami	855
U Wisconsin	856
Albany	858
Arizona	863
Calif San Fran	867
U Wash-Seattle	868
Southern Calif	872
U Calgary	873
U Manitoba	873
Georgetown	880
Loyola	889
New York Med	889
East Tennessee	894
Tufts	897
U Montreal	901
Boston University	907
Tennessee	915
SUNY-Buffalo	916
George Washington	926
Dalhousie U	929
Minn-Minneapolis	932
Univ of Virginia	936
Michigan State	938
West Virignia	938
Louisville	942
Case Western Res	943
North Carolina	945
Med U So Carolina	945
Jefferson	949
Univ SC Columbia	949
UMDNJ-New Jersey	955
Calif San Diego	956
U Brit Columbia	958
Penn State	959
Tulane	964
Temple	969
Kentucky	976
Texas-Houston	976
Marshall	977
Texas Tech	981
Hawaii	990
Baylor	1,005
U Saskatchewan	1,012
Maryland	1,013
Med Col Wisconsin	1,023
Pittsburgh	1,030
Texas-Galveston	1,030
St Louis U	1,036
Northeastern Ohio	1,038
South Alabama	1,046
Hahnemann	1,053
Missouri Columbia	1,054
Nevada	1,070
Mount Sinai	1,078
Bowman Gray	1,082
Connecticut	1,092
U of Michigan	1,106
South Dakota	1,111
Oklahoma	1,113
Puerto Rico	1,127
North Dakota	1,128
Loma Linda	1.136
Calif Davis	1,157
Texas A & M Univ	1,157
U Ottawa	1,170
McGill Univ	1,194
Medical Coll Penn	1,197
Dartmouth	1,200
Med Col Virginia	1,200
Uniformed Services	1,202
Med Col of Georgia	1,208
Howard	1,215
Med Col of Ohio	1,254
Ohio State Univ	1,258
Oral Roberts	1,259
East Carolina	1,260
Utah	1,266
South Florida	1,272
Nebraska	1,284
U Alberta	1,301
Creighton	1,320
Texas-San Antonio	1,357
LSU-Shreveport	1,385
U Western Ontario	1,395
Univ Del Caribe	1,566
Minnesota-Duluth	1,639

*Comparable data are not available for 20 schools

Source: AAMC 1983-1984 Curriculum Directory.

Table 4

U.S. and Canadian Medical Schools

According to Total Lecture, Laboratory, Conference, and Other Scheduled Hours in Preclinical Curriculum

(N= 134)*

Medical School	Hours	Medical School	Hours	Medical School	Hours
Yale	1027	Columbia	1708	East Carolina	1893
Laval Univ	1118	Chicago Medical	1710	Missouri Columbia	1903
Wright State	1239	St. Louis U	1711	Nevada	1904
Northwestern	1281	SUNY Buffalo	1716	Case Western Res	1905
Duke University	1289	Hahnemann	1721	East Tennessee	1912
Penn State	1290	U Ottawa	1726	George Washington	1913
U Chicago Pritzker	1295	Queen's Univ	1728	Texas A & M Univ	1913
Univ of Vermont	1308	U Saskatchewan	1736	Wash U St Louis	1913
Brown	1380	Nebraska	1742	Utah	1914
Mayo Medical	1404	Texas San Antonio	1745	U Alberta	1916
U Wash Seattle	1440	Mount Sinai	1751	Jefferson	1919
Albert Einstein	1440	Calif San Diego	1754	Calif Davis	1923
U Montreal	1448	North Carolina	1756	Indiana	1938
Arkansas	1462	U Calgary	1775	Johns Hopkins	1950
Georgetown	1466	U Brit Columbia	1776	Oral Roberts	1953
Rush	1485	Marshall	1776	Temple	1967
Baylor	1486	Albany	1778	Ponce Sch of Med	1974
U of Ill Chicago	1491	Med Col of Georgia	1783	Med Col Virginia	1974
U of Ill Urbana	1504	Creighton	1786	UMDNJ-New Jersey	1985
Michigan State	1528	Morehouse	1787	Pittsburgh	1988
Tennessee	1549	Kentucky	1788	Calif Los Angeles	1995
Univ of Virginia	1552	Minn-Minneapolis	1809	Texas Galveston	1999
Miami	1559	Med Col of Ohio	1816	Connecticut	2024
Louisville	1568	U Pennsylvania	1819	Univ SC Columbia	2034
New York Med	1584	Cornell	1819	Med Col Wisconsin	2035
Dalhousie U	1586	Massachusetts	1824	Meharry Med	2041
Cincinnati	1586	Medical Col Penn	1826	Dartmouth	2042
Texas Houston	1587	Arizona	1831	Rochester	2051
Wayne State	1590	Howard	1834	Tulane	2055
Loyola	1609	South Alabama	1836	Oklahoma	2065
Texas Tech	1619	McGill Univ	1838	Boston University	2069
Colorado	1619	Kansas	1840	SUNY Upstate	2094
SUNY Downstate	1626	Mississippi	1841	Loma Linda	2100
Calif San Fran	1637	Ohio State Univ	1843	Southern Calif	2108
U Toronto	1642	UMDNJ-Rutgers	1843	Tufts	2111
U Wisconsin	1647	SUNY Stony Brook	1853	Bowman Gray	2139
U of Michigan	1653	U Manitoba	1855	Minnesota Duluth	2169
Med U So Carolina	1655	New York University	1864	South Dakota	2189
Florida	1656	Oregon	1872	Maryland	2222
U Sherbrooke	1673	U Western Ontario	1874	Uniformed Services	2229
West Virginia	1680	North Dakota	1874	Texas Dallas	2231
Hawaii	1681	LSU New Orleans	1878	South Florida	2246
Emory	1695	Northeastern Ohio	1880	Ala Birmingham	2246
Iowa	1702	Calif Irvine	1889	Puerto Rico	2271
				LSU Shreveport	2356
				Univ Del Caribe	2430

*Comparable data are not available for 9 schools.
Source: AAMC 1983-1984 Curriculum Directory

association of american medical colleges

AGENDA

FOR

COUNCIL OF DEANS

ADMINISTRATIVE BOARD

WEDNESDAY, APRIL 11, 1984
5:00 PM - 6:30 PM
EDISON ROOM

THURSDAY, APRIL 12, 1984
9:00 AM - 1:00 PM
GRANT ROOM

WASHINGTON HILTON HOTEL
WASHINGTON, DC

Suite 200/One Dupont Circle, N.W./Washington, D.C. 20036/(202) 828-0400

COUNCIL OF DEANS
ADMINISTRATIVE BOARD

Wednesday, April 11, 1984

5:00 pm - 6:30 pm

Washington Hilton Hotel
Washington, D.C.

AGENDA

Thursday, April 12, 1984

9:00 am - 1:00 pm

ASSOCIATION OF AMERICAN MEDICAL COLLEGES
ADMINISTRATIVE BOARD OF THE COUNCIL OF DEANS

MINUTES

Friday, March 16, 1984
8:00 am - 4:00 pm
Frances C. Wood Conference Room
University of Pennsylvania
Philadelphia, Pennsylvania

PRESENT

(Board Members)	(Staff)
Arnold L. Brown, M.D.	Debra B. Day
William Butler, M.D.	Sandra Garrett, Ed.D.
D. Kay Clawson, M.D.	Joseph A. Keyes, Jr.
Robert Daniels, M.D.	John F. Sherman, Ph.D.
Fairfield Goodale, M.D.	Elizabeth Short, M.D.
Louis J. Kettel, M.D.	
Richard H. Moy, M.D.	
Edward J. Stemmler, M.D.	

I. Call to Order

The meeting was called to order at 8:05 am.

II. Report of the Chairman

Dr. Stemmler reviewed the agenda for the meeting, highlighting the three major tasks to be accomplished: 1) discussion of the COD Administrative Board and its relationship to the Council of Deans; 2) issue identification for the COD white paper, and 3) COD actvities at both the Spring and Annual meetings.

Dr. Stemmler also reported on several issues discussed at the recent AAMC's Officer's Retreat held in December:

- The GPEP Project--the deans sense of disconnectedness to the project was a source of significant concern. An important step toward retifying the problem was taken in the recognition that it existed and in a willingness to act positively to heal any rifts that may have been developing. Concrete steps considered included a planned discussion at the aborted January meeting of the Board with the Project's chairman and the possibility of making the report available to the deans at the Spring Meeting. Because the Panel had made significant modifications of the draft report at the

December meeting, and again in March, it appeared that this would not be possible. Nevertheless, the scheduled discussion at the Spring Meeting of medical education would permit the deans to get their views on the record. It was now up to the Council and the Board to give consideration to action which could be taken, "beyond GPEP."

- The Department of Teaching Hospitals had developed a paper addressing some of the stresses in its membership and outlining recommended actions for dealing with some major issues. The Officer's endorsed the notion of the issue paper as a desirable exercise for each of the Councils. Particularly acute in the COTH paper is the issue of who does the AAMC properly represent. The broad array of hospitals as at present or a more limited number of the AAHC appears to desire, those whose future has a financial impact on the University.

- The relationship between the NRMP and the Colenbrander match and issues related to recruiting senior medical students for PGY-2 positions was discussed with representatives of the societies involved. The retreat stimulated no new initiative but merely confirmed that the first step was taken.

III. Approval of the Minutes

The minutes of the September 22, 1984 meeting of the Administrative Board were amended to reflect that Louis Kettel, M.D. was in attendance. Minutes were then approved as amended.

IV. Action Items

A. Role of the COD Administrative Board and Its Relationship to the Council of Deans

Dr. Stemmler stated that many of the deans felt disconnected from the activities of the Association and suggested that it was the responsibility of the Administrative Board to respond to these concerns by creating a greater sense of involvement of the deans with their organization. In the ensuing discussion conditions and events which may have stimulated such feelings of apathy were addressed. One unhappiness resulted from the format used to conduct the Annual business meeting in which the deans find themselves responding retroactively to agenda items. There has been little time for discussion and almost no opportunity for initiating attention to issues. There seemed to be general agreement with the suggestion that additional time be devoted to COD meetings at the Annual Meeting. This would focus more on deliberation and discussion than receiving reports and acting on routine items. A second notion which was endorsed was that the Board members should accept greater responsibility for communications with Council members. This would be expressed in a number of ways: conducting the new deans orientation in a roundtable, discussion format as opposed to a staff briefing; contacting new deans in advance of the meeting acting as local hosts; and maintaining a dialogue with Council members on issues the Board discusses or should initiate for consideration. Other ideas included sending out the Board agenda in advance and the minutes after each meeting, to all members of the Council with Board members' names and telephone numbers.

B. Issue Identification for COD White Paper

Dr. Stemmler reported that the staff had been asked to prepare an issue identification paper, identifying the main forces impacting on medical education institutions, as a first step toward producing a COD product comparable to the White Paper produced by COTH. This paper would serve as the basis for a discussion at the Spring Meeting. The ensuing discussion addressed various aspects of the paper: goals and objectives; tone; issues and the process of its development and approval. Attached is a structured summary of that discussion.

C. COD Activities at Annual Meeting

Members of the Administrative Board discused a number of options for improving communication and involvement of all the deans at the Annual Meeting. It was concluded that a small planning committee would be convened to investigate the options and feasibility for implementation. One possibility of suggested was that of scheduling a private session with the plenary speakers in which the ideas they addressed could be discussed in greater detail. The scheduling of additional COD activities at the Annual Meeting was also discussed. It was generally agreed that such events would be scheduled on Sunday and/or Monday to facilitate the schedules of the deans who needed to return to their institutions early in the week.

Indirect Costs: Annual Meeting Write-Up--Dr. Stemmler reported that In the agenda book was a proposal that a one and one-half hour at the 1984 Annual Meeting be devoted to issues related to indirect costs as a component of Federal sponsorship of biomedical research. Speakers would include: Donald Kennedy, Ph.D., President, Stanford University; Kenneth Bordin, Ph.D., Professor of Physiology, USCT; and John J. Lordan, Deputy Associate Director, Finance and Accounting Division, Office of Managment and Budget. Members of the Board supported the proposal and stated that it was an effective approach in promoting a more cohesive position between faculties and institutions.

D. COD Spring Meeting Program

Dr. Stemmler reported that the agenda for the Spring Meeting, specifically on Tuesday, April 3rd, was designed to stimulate discussion issues with respect to contemporary medical education of concern to the deans. He noted that the draft of the GPEP Final Report will not be available at the Spring Meeting, and consequently, would not be the specific subject of the discussion.

E. New Challenges for the Council of Teaching Hospitals and the Department of Teaching Hospitals

Dr. Moy stated several concern with regard to the COTH white paper, specifically related to the categorization of membership and definition of primary teaching hospitals. These concerns were set out in detail in his letter to the Board. He feared that the definitions presented could adversely affect community-based medical schools and the hospitals that they related to. He felt the paper provided HCFA a blueprint on how to devise a cleavage plane in our membership when considering cost cutting strategies. He believed that these modifications could be made to the document which would preserrve its intended purpose, but reduce the prospect its having a deleterious impact. It was agreed that Drs. Moy and Butler would discuss the issues with Dr. Knapp in an effort to prepare more acceptable language for consideration at the April Executive Council meeting.

F. NRMP - Changes in Draft Minutes; Follow-up Action

Members of the Board reviewed the minutes of the meeting of the AAMC Executive Committee with representatives of five academic societies on December 7, 1983. They concluded that it was necessary to maintain the momentum developed through this initial discussion. They advised that another meeting with representatives from the specialty societies be scheduled.

V. Information Items

A. Proposed Criteria for Resident Supervision in VA Hospitals

Dr. Stemmler reported that Richard Schmidt, M.D. would discuss the issues related to housestaff supervision at the upcoming Spring Meeting. In issues identified in the recent GAO study revealed that inadequate supervision of housestaff was not unique to VA hospitals and was an issue deservant of the attention of the deans in their own institutions.

B. Dr. Schwarz - Letter of Resignation

Dr. Stemmler reported that he, Dr. Janeway, and Dr. Brown had caucaused on the matter and recommended that the COD Administrative Board act to recommend that D. Kay Clawson currently a Member-at-Large of the Administrative Board, be appointed by the Executive Council to fill Dr. Schwarz's unexpired term.

If the Executive Council concurs, they recommend that the COD to fill the Member-at-Large vacancy thus created by appointing L. Thompson Bowles to this position.

VI. New Business

Dr. Stemmler reported that he had recently received a letter from Alastair M. Connell, M.D., Dean, University of Nebraska, expressing uncertainties about the value and role of the MCAT exam in admissions decisions. Dr. Stemmler suggested and the Board agreed that a discussion of this topic be scheduled for the April meeting of the Board. While this may not prove to be the definitive resolution of the matter, there was concurrence that a discussion with Dr. Erdmann was an essential next step.

VII. Adjournment

The meeting was adjourned at 3:00 pm.

SUMMARY OF ISSUES DISCUSSED AT THE BOARD MEETING RELATED TO: Issue Identification for COD White Paper

A. Goals and Objectives
B. Tone
C. Issues to be Addressed
D. Review Process

A. Goals and Objectives

- Identification and assessment of long range issues, perceived by the deans as important-to be addressed in an explicit way.

  1. Role of the COD and its' Administrative Board
  2. Role of the COD in relation to other Councils (COTH; CAS)
  3. Role of the COD in redefining the mission of the AAMC and establishing the priorities for the next decade
  4. Defining the role of the contemporary medical school
  5. Defining the role of the AAMC in serving its constituents

B. Tone

- "Focus on medical education as the primary responsibility of the medical school and the implications for Basic Science and and Clinical faculty"
- "Deal with faculty who have withdrawn from medical education and who are now involved in other ventures"
- "Medical Education section of the paper should aim to respond to GPEP - practical responsibilities with operational significance"
- Take a proactive rather than a reactive position.
- "Should present the flavor that this is a real opportunity"
- "Medical Schools are primarily an educational institution; major national resource for research; primary medical care institution in the community with the largest care to the indigent
- "Careful not to present a devisive view-this paper is not in competition with other papers written by COTH and CAS-all papers woven together to present a unified position should be of the Association"
- "This paper serves as a 'position paper' - try not to avoid issues that may be perceived as contentious - don't avoid issues for fear that it will offend anyone.

C. Issues

1. Teaching/Education

- Problems associated with MCAT and National Boards; what purpose do they serve?

- "Need to make a major effort to change our outlook on medical education"

- "Quality of instruction is not as good"; "residents are teaching medical students"; "faculty spend so little time with students"

- "Cutbacks in state appropriations force us to artificially push new faculty into non-tenure earning tracks creating ill feeling among the faculty"

- "The number of USFMG's re-entering the U.S. for residencies - not to mention the increase in number of alien FMG's, are causing problems in terms of quality"

- "Independent replacement of the National Board by FLEX I and II now under control of state licensing boards will in effect give them control over the curriculum. This issue has been under the surface for a long time-when it emerges it could be catastrophic"

- "Look at the post GMENAC Era - and be prepared to discuss the proposed glut of physicians - glut may be a reflection of the large number of FMG's admitted into the U.S. in the 60's and 70's...not all of these physicians are able - some are terrible"

2. Patient Care

- Relationship with teaching hospital (from a COD perspective versus a COTH perspective).

- Financing of medical school operations through private practice income - "more and more medical schools are forced to become increasingly dependent on practice income causing faculty to have less time for teaching, bedside care, and research"

- "Increasing preoccupation on the part of the faculty with the practice as conducted in the hospital - so that the role of dean as representative of the academic interest of the enterprise will become progressively less as the common interest of the clinical faculty and the hospital become emphasized by virtue of the economic consequences."

- "The practice is becoming the 'third force' in the academic medical center (with the hospital and medical school being the other governance forces); need to carve out a new area where balance can be accommodated.

- "The dynamics of this 'force' has consequences for the AAMC - deans started the Association to protect the interest of the medical school. Now I sense a growing development that doesn't include academic (interests) but includes the hospital and faculty"

- "DRG's and the question of two classes of medical care will have a punitive effect on teaching hospitals and medical education"
- "The practice is the principle management task that the dean needs to influence"
- "Changing social context - combination of cost effective medical care and academic institutions supported by clinical income."
- "This is a key difference between public and private schools - private schools, without state subsidies, have been juggling this balance for years. There is a nice interrelationship here that has never been capitalized - public schools teaching private schools survival techniques and vice versa.
- "Average faculty salary exceeds average community salary"
- "Faculty related issues: recruitment and retention"

3. Research

- "Indirect cost problems related to research and training grants"
- "Preserving the physical plant"
- "How to retain vitality"
- "Which institutions should be research intensive? Should all medical schools conduct research?"
- "Problems associated with research animals"

4. Socio/Economic

- Contracting/downsizing/retrenchment: how does one prepare itself for the eventuality and the consequences on class size, faculty, curriculum, specialty training, etc.
- Declining attractiveness of medicine as a career (indebtedness)
- The effect and impact of the recent JCH ruling on open medical staff policies
- The impact of PPO's; HMO's and other alternative delivery systems on the AMC-(patient mix; "market segmentation", etc.)
- Rapid growth of the "For-profits" and the impact on the AMC
- "Deans need to be prepared to be spokespersons for the AMC - to describe "Quality Indicators" in the system that outride the HMO's claims that they provide more cost effective care"

5. Additional Issues

- Computers in the post-physician era
- Medical school/industry relationships/ethical considerations

6. Review Process

The Board emphasized the importance of members of the Council of Deans having a role in the development of the paper while it was in its formative stages. Consequently, the process should assure that it be presented for discussion at the COD meeting prior to its consideration for approval by the Executive Council.

MCAT RELATED ISSUES

At its last meeting, the COD Administrative Board concluded that it would be appropriate to have a discussion of the MCAT at its next meeting. In preparation for the discussion with Dr. Erdmann on the evening of April 11th, we have assembled some background materials which appear on the following pages. They are:

- A Description of MCAT Research
- A Status Report on:
  - MCAT Diagnostic Services Program (DSP)
  - MCAT Writing Sample
- Draft JME Datagram on MCAT Scores and Student Progress in Medical School
- Preprint of JME article on MCAT Validation
- New England Journal of Medicine Sounding Board article: "The Medical College Admission Test and the Selection of Medical Students"

MCAT Research

The AAMC's MCAT staff continues to work on validity studies with thirty schools of medicine participating in the MCAT Interpretive Studies Program. A preliminary summary of these studies, demonstrating the relationships found between MCAT scores and performance in the first two years of medical school, will be published in the June, 1984 issue of the Journal of Medical Education. The report documents support for the predictive and incremental validity of MCAT scores with respect to the criteria studied. While the program is continuing to pursue studies of basic science performance, the focus is now directed primarily to an examination of clinical science performance.

A related study of MCAT validity is also expected to be published in the Journal of Medical Education in early summer. This study shows how MCAT scores are related to the probability of a student experiencing academic problems in medical school, which result in delayed graduation or withdrawal/dismissal. This study, based on all 1978 and 1979 medical school entrants, indicates that the lower ranges of the MCAT scale are quite sensitive to the likelihood of these outcomes.

MCAT research also continues on the effect of commercial review courses on test performance. A study of performance differences for first-time takers is being conducted. A related study at one of the study schools is looking at the subsequent medical performance of students who used commercial review courses to prepare for the test. The study will compare the performance of these students with others who achieved similar scores without the aid of a commercial program.

Many additional MCAT research studies have been published since the original edition of the Annotated Bibliography of MCAT Research, made available in November, 1982. These studies will be included in a revised edition available in time for the 1984 AAMC Annual Meeting. A supplementary list of the additional references is currently available from the Division of Educational Measurement and Research.

An article authored by Dr. James B. Erdmann appeared in the Sounding Board section of the February 10, 1984 issue of the New England Journal of Medicine. It discusses many of the research-related issues about the MCAT that DEMR staff have been addressing, including the test's predictive validity, the effect of and its influence on college preparation, and the effects of coaching courses on performance.

MCAT Diagnostic Services Program

DEMR staff have also been recently studying a proposal for an additional mechanism for assisting minority college students who are considering a career in medicine. The purpose of a Diagnostic Services Program (DSP) would be to provide a detailed assessment of strengths and weaknesses of students in those areas of academic preparation tested in the MCAT. These diagnostic assessments of knowledge and skills would be obtained by means of modules of test questions selected to provide specific feedback on levels of accomplishment that can be described in terms of the typical MCAT examinee, typical applicant, etc. The potential exists to prepare separate test modules for each of the MCAT areas of assessment. Diagnostic feedback to the student would include evaluative information that parallels the content as presented in the student manual; overall performance related to a projected range of MCAT scores; quantitative evaluations referenced to the MCAT population for each major topic and subtopic area; and suggested areas of study based on weaknesses identified by the exercise.

The proposal involves a three year experimental effort assessing the feasibility and effectiveness of the program as support for medical school-sponsored premedical enrichment programs.

MCAT Writing Sample

As reported last spring, the AAMC is developing an experimental project that will evaluate the effectiveness and feasibility of collecting an essay from all examinees during each MCAT administration. Among the issues to be addressed by the experiment will be: the uniqueness of information provided by an essay, the value of such information to admissions decisions, how and when the essay will be used in admissions considerations, and the impact on undergraduate medical students.

An ad hoc committee composed of representatives of admissions, minority affairs and undergraduate health professions advisors is working with staff on the development and design of the project. Also, liaison representatives from each of these groups from the four regions have also been selected to provide input to the advisory committee. The project is receiving consultation from a nationally recognized expert in the development and operation of large scale writing programs.

The committee is developing essay topics that will be field tested this spring. The results of the field testing will be evaluated by the committee during the latter part of June. During the spring and summer, the components of the experimental project will be developed and the project is presently scheduled to begin in the Spring of 1985.

association of american medical colleges

Datagram Proposal

MCAT Scores and Student Progress
in Medical School

Robert F. Jones, Ph.D.
Suzanne Vanyur

Division of Educational Measurement and Research

Suite 200/One Dupont Circle, N.W./Washington, D.C. 20036/(202) 828-0400

MCAT Scores and Student Progress in Medical School

An article appearing in this issue of the Journal summarizes correlations found between Medical College Admission Test (MCAT) scores and student achievement in the first two years of medical school, as measured by course grades and scores on the National Board of Medical Examiners (NBME) Part I examination. A validity question of further practical import to admissions committees is how MCAT scores relate to the probability of a student having academic problems that delay or impede their progress through medical school. As with most questions of test validity, this is best answered from local institutional experience with the scores. However, local studies are inevitably hampered by the low incidence of students who experience academic problems, due presumably to the effective use of various measures of academic achievement and student motivation in selection. The purpose of this datagram is to demonstrate the relationship between MCAT performance and student progress through medical school for the enrolled medical student population as a whole. While such a data aggregation may mask differences between institutions, it should provide some perspective for schools interested in establishing a minimum threshold level of performance at which a student may reasonably be expected to satisfy the demands of the medical school curriculum in the normal time.

The population studied includes all students who entered in 1978 and 1979 the 126 medical schools accredited by the Liaison Committee on Medical Education (LCME). Academic status records of each student are maintained in the Association of American Medical Colleges (AAMC) Student Records Systems, beginning with the matriculation date and continuing until there is a record of graduation or other termination. Changes in status are provided periodically by the schools to the AAMC. The majority of students entering in 1978 and 1979 were expected to graduate in either 1982 or 1983, respectively.

From information contained in the Student Records System, the authors grouped students into five categories: 1) graduated on time; 2) delayed graduation--academic reasons; 3) delayed graduation--non-academic reasons; 4) withdrawal/dismissal--academic reasons; and 5) withdrawal/dismissal--non-academic reasons.

Students were classified in Group 1 if their actual graduation date was no later than two months subsequent to their original expected graduation date indicated at the time of matriculation. While these may include students who experienced some academic problems in medical school, they would be students who managed to rectify the problems in time to graduate with their class. Students who graduated later than the expected date or who continue to be enrolled were classified in Groups 2 or 3. Those students who took a leave of absence for non-academic reasons, for example, for health reasons, were placed in Group 3. The remaining students who maintained continuous enrollment were presumed to have decelerated their program or made to repeat part of the curriculum, because of academic difficulties. These assumptions were necessary because direct designations of the reasons for changes in expected graduation dates are not provided for in the reporting system. Students who withdrew or were dismissed from medical school were classified in Groups 4 or 5, depending upon whether the school reported that the withdrawal/dismissal was for academic or non-academic reasons. Exceptions were those students who subsequently re-entered medical school. These were classified in Groups 2 or 3, depending upon the reasons for the withdrawal/dismissal. In order to classify students into these five categories, students enrolled in BA/MD, MD/JD, or MD/PhD programs, and others whose original expected graduation date was later than November 1983, were dropped from the analyses, since graduation data would not have been available at the time the analyses were performed. In addition, students who died during the period are not included in the tables that follow.

Findings

Tables 1 through 6 show the number and proportion of students at each MCAT score level who were classified into each of these five groups. The results indicate that 88.2% of the 1978 and 1979 first year entrants graduated on time. A total of 8.3 percent had their graduation delayed, 5.4% for academic reasons and 2.9% for non-academic reasons. Of the 3.4 percent of students who either withdrew or were dismissed, 1.3% were for academic reasons while 2.1% were for non-academic reasons. Examination of the tables reveals a positive relationship between performance on the MCAT and graduating on time. This association is due to an inverse relationship between MCAT performance and both delayed graduation for academic reasons and withdrawal/dismissal for academic reasons. The proportion of students withdrawing or delaying progress for non-academic reasons tends to be fairly uniform across the range of MCAT scores. The probability of experiencing academic difficulties shows little variation for those students achieving scores between 8 and 15 on the MCAT subtests. However, for those scoring below 8, the probability of encountering academic problems tends to increase systematically as MCAT scores decrease.

Figure 1 illustrates further the relationship between MCAT performance and the likelihood of experiencing academic problems by comparing scores for the Science Knowledge and Science Problems subtest with those for the Skills Analysis subtests. For simplicity of presentation, students whose academic problems caused a delay of graduation or withdrawal/dismissal are grouped together, and MCAT scores are averaged within science versus skills areas. For both averages, the likelihood of a student experiencing academic problems increases consistently as scores decline below 8. The increase tends to be slightly more pronounced as the Science Knowledge and Science Problems scores decline. Since academic problems tend to surface in the first year of medical school, this finding is not surprising. Both for the old and new MCAT, the strongest correlations with first year performance have been found for MCAT scores in science areas of assessment.

A final note to be made on the tables and figure is that even at the very lowest levels of MCAT performance, approximately half of the small numbers of students who were accepted were successful in graduating from medical school on time. This appears to reflect the effectiveness of admissions committees in identifying other factors in addition to MCAT scores that predict student success. It also argues against using MCAT scores absolutely and rigidly in admissions decisions, but as contributing information to a complete applicant profile.

MCAT *Biology* Scores and Medical Student Progress -

1978 and 1979 First Year Entrants

MCAT Biology	All Entrants*		Graduated on Time		Delayed Graduation Academic**		Delayed Graduation Non-Academic†		Withdrawal/Dismissals Academic		Withdrawal/Dismissals Non-Academic	
	N	% of Total	N	%	N	%	N	%	N	%	N	%
12-15	3663	11.7	3324	90.7	160	4.4	103	2.8	11	0.3	65	1.8
11	5341	17.0	4844	90.7	201	3.8	156	2.9	19	0.4	121	2.3
10	7052	22.5	6431	91.2	287	4.1	175	2.5	48	0.7	111	1.6
9	6219	19.8	5571	89.6	273	4.4	194	3.1	54	0.9	127	2.0
8	4256	13.6	3700	86.9	254	6.0	122	2.9	84	2.0	96	2.3
7	2502	8.0	2096	83.8	180	7.2	86	3.4	64	2.6	76	3.0
6	1550	4.9	1176	75.9	187	12.1	48	3.1	85	5.5	54	3.5
5	485	1.5	334	68.9	94	19.4	15	3.1	30	6.2	12	2.5
4	186	0.6	108	58.1	49	26.3	5	2.7	20	10.8	4	2.2
3	66	0.2	35	53.0	15	22.7	8	12.1	6	9.1	2	3.0
2	18	0.1	9	50.0	4	22.2	2	11.1	1	5.6	2	11.1
1	1	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
TOTAL	31339	100.0	27628	88.2	1705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

Table 2

MCAT *Chemistry* Scores and Medical Student Progress -

1978 and 1979 First Year Entrants

MCAT Chemistry	All Entrants* N	All Entrants* % of Total	Graduated on Time N	Graduated on Time %	Delayed Graduation Academic** N	Delayed Graduation Academic** %	Delayed Graduation Non-Academic† N	Delayed Graduation Non-Academic† %	Withdrawal/Dismissals Academic N	Withdrawal/Dismissals Academic %	Withdrawal/Dismissals Non-Academic N	Withdrawal/Dismissals Non-Academic %
12-15	5629	18.0	5034	89.4	257	4.6	196	3.5	11	0.2	131	2.3
11	5193	16.6	4740	91.3	200	3.9	137	2.6	26	0.5	90	1.7
10	5776	18.4	5264	91.1	235	4.1	142	2.5	38	0.7	97	1.7
9	5383	17.2	4849	90.1	233	4.3	133	2.5	49	0.9	119	2.2
8	4060	13.0	3587	88.3	204	5.0	108	2.7	71	1.7	90	2.2
7	2668	8.5	2239	83.9	186	7.0	96	3.6	83	3.1	64	2.4
6	1493	4.8	1193	79.9	174	11.7	49	3.3	47	3.1	30	2.0
5	705	2.2	488	69.2	102	14.5	36	5.1	52	7.4	27	3.8
4	317	1.0	178	56.2	84	26.5	11	3.5	29	9.1	15	4.7
3	90	0.3	48	53.3	22	24.4	3	3.3	12	13.3	5	5.6
2	23	0.1	7	30.4	7	30.4	3	13.0	4	17.4	2	8.7
1	2	0.0	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
TOTAL	31,339	100.0	27,628	88.2	1,705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

Table 3

MCAT *Physics* Scores and Medical Student Progress - 1978 and 1979 First Year Entrants

MCAT Physics	All Entrants* N	All Entrants* % of Total	Graduated on Time N	Graduated on Time %	Delayed Graduation Academic** N	Delayed Graduation Academic** %	Delayed Graduation Non-Academic† N	Delayed Graduation Non-Academic† %	Withdrawal/Dismissals Academic N	Withdrawal/Dismissals Academic %	Withdrawal/Dismissals Non-Academic N	Withdrawal/Dismissals Non-Academic %
12-15	5607	17.9	5004	89.2	264	4.7	175	3.1	31	0.6	133	2.4
11	4024	12.8	3693	91.8	141	3.5	94	2.3	15	0.4	81	2.0
10	5090	16.2	4630	91.0	197	3.9	145	2.8	30	0.6	88	1.7
9	6769	21.6	6123	90.5	294	4.3	164	2.4	66	1.0	122	1.8
8	4436	14.2	3862	87.1	251	5.7	143	3.2	76	1.7	104	2.3
7	2808	9.0	2374	84.5	207	7.4	92	3.3	67	2.4	68	2.4
6	1508	4.8	1191	79.0	159	10.5	58	3.8	63	4.2	37	2.5
5	768	2.5	551	71.7	119	15.5	31	4.0	40	5.2	27	3.5
4	292	0.9	181	62.0	60	20.5	12	4.1	29	9.9	10	3.4
3	35	0.1	18	51.4	12	34.3	0	0.0	5	14.3	0	0.0
2	2	0.0	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	31,339	100.0	27,628	88.2	1,705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

Table 4

MCAT *Science Problems* Scores and Medical Student Progress-

1978 and 1979 First Year Entrants

MCAT Science Problems	All Entrants* N	All Entrants* % of Total	Graduated on Time N	Graduated on Time %	Delayed Graduation Academic** N	Delayed Graduation Academic** %	Delayed Graduation Non-Academic† N	Delayed Graduation Non-Academic† %	Withdrawal/Dismissals Academic N	Withdrawal/Dismissals Academic %	Withdrawal/Dismissals Non-Academic N	Withdrawal/Dismissals Non-Academic %
12-15	4800	15.3	4293	89.4	230	4.8	148	3.1	12	0.3	117	2.4
11	5581	17.8	5112	91.6	192	3.4	154	2.8	24	0.4	99	1.8
10	5707	18.2	5206	91.2	221	3.9	145	2.5	44	0.8	91	1.6
9	7017	22.4	6273	89.4	325	4.6	202	2.9	69	1.0	148	2.1
8	3747	12.0	3300	88.1	202	5.4	98	2.6	66	1.8	81	2.2
7	2306	7.4	1895	82.2	196	8.5	74	3.2	72	3.1	69	3.0
6	1412	4.5	1081	76.6	179	12.7	52	3.7	61	4.3	39	2.8
5	497	1.6	322	64.8	90	18.1	28	5.6	44	8.9	13	2.6
4	224	0.7	125	55.8	55	24.6	10	4.5	24	10.7	10	4.5
3	42	0.1	19	45.2	12	28.6	3	7.1	5	11.9	3	7.1
2	6	0.0	2	33.3	3	50.0	0	0.0	1	16.7	0	0.0
1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	31,339	100.0	27,628	88.2	1705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

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MCAT *SA:Reading* Scores and Medical Student Progress- 1978 and 1979 First Year Entrants

MCAT SA:Reading	All Entrants* N	All Entrants* % of Total	Graduated on Time N	Graduated on Time %	Delayed Graduation Academic** N	Delayed Graduation Academic** %	Delayed Graduation Non-Academic† N	Delayed Graduation Non-Academic† %	Withdrawal/Dismissals Academic N	Withdrawal/Dismissals Academic %	Withdrawal/Dismissals Non-Academic N	Withdrawal/Dismissals Non-Academic %
12-15	2651	8.5	2378	89.7	123	4.6	84	3.2	9	0.3	57	2.2
11	4130	13.2	3705	89.7	181	4.4	124	3.0	17	0.4	103	2.5
10	8452	27.0	7643	90.4	348	4.1	231	2.7	68	0.8	162	1.9
9	5921	18.9	5310	89.7	271	4.6	167	2.8	56	0.9	117	2.0
8	5384	17.2	4768	88.6	286	5.3	137	2.5	81	15.	112	2.1
7	2749	8.8	2332	84.8	201	7.3	87	3.2	61	2.2	68	2.5
6	868	2.8	694	80.0	77	8.9	30	3.5	37	4.3	30	3.5
5	691	2.2	492	71.2	110	15.9	34	4.9	43	6.2	12	1.7
4	249	0.8	162	65.1	47	18.9	15	6.0	22	8.8	3	1.2
3	144	0.5	86	59.7	34	23.6	4	2.8	18	12.5	2	1.4
2	53	0.2	30	56.6	14	26.4	1	1.9	5	9.4	3	5.7
1	47	0.1	28	59.6	13	27.7	0	0.0	5	10.6	1	2.1
TOTAL	31,339	100.0	27,628	88.2	1,705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

Table 6

MCAT SA:Quantitative Scores and Medical Student Progress -

1978 and 1979 First Year Entrants

MCAT	All Entrants*		Graduated on Time		Delayed Graduation				Withdrawal/Dismissals			
					Academic**		Non-Academic†		Academic		Non-Academic	
SA:Quantitative	N	% of Total	N	%	N	%	N	%	N	%	N	%
12-15	4098	13.1	3685	89.9	197	4.8	112	2.7	18	0.4	86	2.1
11	5717	18.2	5129	89.7	241	4.2	183	3.2	36	0.6	128	2.2
10	6020	19.2	5416	90.0	271	4.5	175	2.9	39	0.6	119	2.0
9	5788	18.5	5241	90.5	231	4.0	151	2.6	57	1.0	108	1.9
8	4205	13.4	3755	89.3	199	4.7	102	2.4	56	1.3	93	2.2
7	2525	8.1	2189	86.7	161	6.4	73	2.9	49	1.9	53	2.1
6	1404	4.5	1120	79.8	153	10.9	42	3.0	53	3.8	36	2.6
5	980	3.1	720	73.5	131	13.4	44	4.5	57	5.8	28	2.9
4	384	1.2	247	64.3	73	19.0	20	5.2	30	7.8	14	3.6
3	159	0.5	99	62.3	35	22.0	10	6.3	12	7.5	3	1.9
2	48	0.2	21	43.8	13	27.1	2	4.2	11	22.9	1	2.1
1	11	0.0	6	54.5	0	0.0	0	0.0	4	36.4	1	9.1
TOTAL	31,339	100-0	27,628	88.2	1705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

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Source: Association of American Medical Colleges, DEMR, March, 1984.

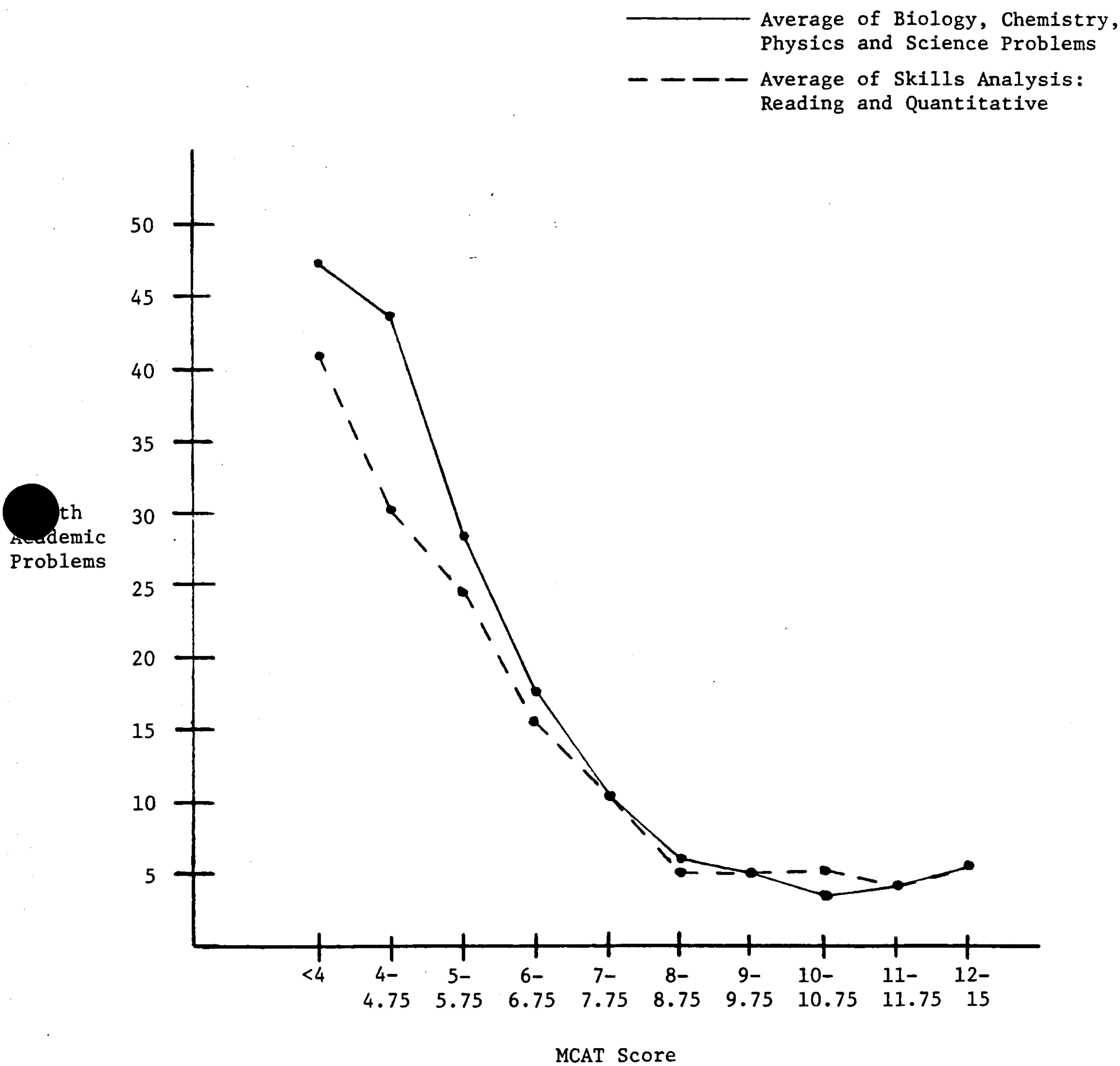

Figure 1

Percentage of students having academic problems in medical school by Medical College Admission Test (MCAT) scores - 1978 and 1979 entering classes.

association of american
medical colleges

VALIDITY OF THE MCAT FOR PREDICTING PERFORMANCE IN THE FIRST TWO YEARS OF MEDICAL SCHOOL

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ABSTRACT

The authors present the first systematic summary of predictive validity research on the new Medical College Admission Test (MCAT) since its introduction in 1977. Data are drawn primarily from the MCAT Interpretive Studies Program, a cooperative effort between the AAMC and thirty of its member schools to conduct research that will both facilitate local use of the test scores and contribute to a national perspective on their value in medical school admissions. The results show that MCAT scores by themselves have significant predictive validity with respect to first and second year medical school course grades and NBME-Part I scores, and that they complement the predictive validity of undergraduate college grades. The MCAT science areas of assessment, particularly Biology, Chemistry, and Science Problems, tend to have higher correlations with initial performance in medical school, but the Skills Analysis:Reading subtest may retain its predictive value best over time. Correlation values are discussed in terms of methodological factors which constrain their size. They are also compared to those found for other professional and graduate school admissions tests. Future directions for MCAT validity research are described.

Beginning with the first use of the new Medical College Admission Test (MCAT) for selecting entrants to medical school in 1978, there has been great interest in studies designed to assess the test's predictive validity. Eleven such studies have appeared in the Journal of Medical Education alone during 1979-1983, with many more the topic of presentations at professional meetings (1). The Association of American Medical Colleges (AAMC), sponsors of the MCAT, has shared this interest. In 1980, the AAMC began the MCAT Interpretive Studies Program, a cooperative effort with 30 selected schools of medicine to conduct validity research on the MCAT. The purpose of this paper is to provide a preliminary summary of the MCAT validity evidence to date as it relates to performance in the first two years of medical school.

There are as many questions that can be addressed concerning MCAT validity as there are specific inferences to be made from the scores. Our purpose in this summary is to address some validity questions of general interest. The answers may not apply to each situation, but reveal general patterns in the ability of MCAT scores to predict the performance of students in the basic medical sciences. Five commonly posed questions or sets of questions in this regard are:

1) How does the predictive validity of MCAT scores in relation to performance in the basic medical sciences compare to that of undergraduate grade point average (GPA)?

2) Does the MCAT contain unique information, not already provided by undergraduate GPA, that aids in the prediction of students' performance? To what degree?

3) What is the relative predictive validity of the individual MCAT scores in relation to performance in the basic medical sciences?

4) What is the relative predictive validity of the individual MCAT scores in relation to performance in specific areas?

5) How strong is the predictive validity of MCAT scores? Does it meet the standards that should be expected of a measure of its kind? How does it compare to that of other graduate and professional school admission tests?

Procedures

To answer these questions, results of studies were available from half (15) of the schools participating in the MCAT Interpretive Studies program. Results from published studies at five other schools which were comparable in terms of the statistical indices used, were added to this collection. Eighteen of these are U.S. medical schools, 13 public and 5 private. Two are Canadian schools. Most (16) of the schools have a traditional, discipline-oriented curriculum in the first two years, 2 use an organ systems approach, and 2 provide a mix of straight discipline courses and organ systems units. Studies were conducted separately by class, primarily those entering in 1978 and 1979, with most schools contributing data from more than one class. However, not all types of criteria measures or statistical indices were available from all schools.

Criterion performance measures for the first two years were classified along several lines. Summary measures of first-year or second-year performance were designated year 1 grades and year 2 grades, respectively. These included criteria such as grade-point average for courses taken in a given year, class rank, or scores on an end-of-year comprehensive examination. These criteria are important for MCAT validity studies because they reflect locally determined standards of student performance. Total scores on the National Board of Medical Examiners (NBME) Part I examination provide another summary measure of performance in the basic medical sciences. NBME-Part I derives its importance as a criterion for MCAT validity studies from its current role in procedures for physician licensure. Subtests of NBME-Part I were also used as criteria to study relationships between MCAT scores and peformance in specific disciplines. Local course grades or examination scores were grouped similarily by the disciplines represented in the NBME subtests. Grades in interdisciplinary courses were too infrequently used as criteria to be examined separately in this summary.

Two statistics commonly used in predictive validity studies to index the relationship between test scores and criterion measures provide the "raw data" for this preliminary summary. The first is the simple Pearson product-moment correlation coefficient (r) or validity coefficient. Pearson correlations were computed for each MCAT scale and each undergraduate GPA measure (science, nonscience, total), with each criterion measure whose underlying measurement scale allowed (for example, honors- pass-fail grades were not analyzed in this fashion).

Since these correlations were based on enrolled student samples which, by virtue of the selection process, are quite homogeneous with respect to the predictive measures being studied, they were then "corrected" for restriction of range by a commonly used formula (2). Corrected correlations attempt to estimate what the observed correlations would be if all applicants to the school, not just the more homogeneous group of enrolled students, were studied. A second index is the multiple correlation coefficient. This is the Pearson correlation that results when a group of predictor variables are combined in an optimal way and related to a criterion measure. Multiple correlations were computed with all summary criterion measures, year 1 and 2 grades, NBME Part I total, for 1) the six MCAT scores combined, 2) the two independent GPA measures (science and non-science) combined, and 3) the MCAT scores and GPA measures combined. The size of these multiple correlations is similarly constrained by the limited range of performance on the predictive measures shown in the enrolled student samples.

However, a correction formula for multiple correlations is not available.

Results and Discussion

Table 1 displays the distributions of multiple correlations computed with year 1 grades, year 2 grades, and NBME-Part I, while Table 2 compares the percentage of times GPA or MCAT composites were better predictors. Table 3 displays the average individual correlations or validity coefficients for these same criteria. Table 4 gives the percentage of times individual GPA and MCAT scores were the best single predictors. Table 5 shows the average validity coefficients for criteria classified by basic science area and method of evaluation. Even at this early stage in the accumulation of data, certain patterns or trends are evident which relate to the questions posed previously.

Tables 1 and 2 show that whether MCAT scores or undergraduate GPA are better predictors depends upon the criterion being considered. When the criteria are medical school course grades, MCAT scores in combination are similar to undergraduate grades in their predictive value. Median multiple correlations are identical, and within any one sample either predictor group was about equally likely to show a higher multiple correlation. However, as shown in Table 3, no single MCAT score tends to be correlated as highly as undergraduate science GPA. When the criteria are NBME-Part I scores, MCAT scores in combination (Table 1) are substantially better predictors of performance. This was true of every sample studied

(Table 2). Moreover, several MCAT scores individually (Table 3) were the best single predictors of NBME performance, in terms of their average correlation.

The data in Tables 1 and 2 also bear on the second validity question which concerns the degree to which MCAT scores contribute unique and useful information to the admissions process. In theory, MCAT scores and undergraduate grades are complementary pieces of information. The shortcomings of one measure are the strengths of the other. The MCAT assesses students on a standard content of knowledge and skills and reports scores on a standard scale, but is limited to sampling performance on a single day in a somewhat artificial setting. GPA is not standardized in either way, but is based on repeated assessments of a student's performance over a period of time. The multiple correlation values provide empirical support for this complementary relationship. Those based on a combination of MCAT scores and undergraduate GPA are consistently higher than those based on either predictor group separately. The increase in the average multiple correlation when MCAT is added to GPA, is 11 to 14 points when course grades are the criteria and 29 points when NBME scores are the criteria. These comparisons are usually expressed in terms of the "proportion of variance explained." that is, the multiple correlation values squared. In these terms, MCAT scores improve predictability by as much as 90 percent with course grades as the criteria and nearly 300 percent with NBME scores. Moreover, the contribution of MCAT to predictability generalized across samples. In all cases, the increase in the multiple correlation value when MCAT was added to GPA was statistically significant.

The third question, how individual MCAT scores relate to overall performance in the basic sciences, is addressed by the correlation values, observed and "corrected" for range restriction, shown in Table 3. Higher average correlations with year 1 grades were found for the MCAT science areas of assessment than for the skills analysis subtests. Chemistry has the highest average correlation, with Biology and Science Problems only slightly less. In over two-thirds of the samples studied, either Chemistry or Biology was the best predictor among MCAT scores (Table 4). Physics was the one exception to the predominantly higher correlations found for the science areas of assessment. Its average correlation with year 1 grades was lower than the other science assessment areas and it correlated best among MCAT scores with year 1 grades in only 1 of 34 samples (3%).

A different pattern of results is shown with year 2 grades as the criterion. Correlations between MCAT scores and year 2 grades are all systematically lower, except for SA:Reading. As a result, the average correlation for SA:Reading with year 2 grades is on the same level as the correlations for Biology, Chemistry, and Science Problems. Moreover, in 25 percent of the samples studied, SA:Reading was the best MCAT predictor of year 2 grades, only slightly less than the percentage for Chemistry.

These findings appear to reflect the persistent nature of the skills differences shown in the SA:Reading scores. Differences in science knowledge that students exhibit on the MCAT are reduced by the time they complete the first year of the basic science curriculum. These differences are then less useful for predicting the relative performance of students in the second year. The medical school curriculum presumably has a less direct impact in reducing differences in the more basic skils measured by the SA:Reading subtest. Therefore, while the science subtests are better predictors of how students perform initially in medical school, the SA:Reading subtest may be one that is more enduring.

The science subtests show the highest correlation with performance on NBME-Part I. In half of the samples studied, Chemistry was the best MCAT predictor. In the remaining samples, usually either Science Problems or Biology was the best MCAT predictor.

Data in Table 5 address the fourth question of how MCAT scores relate to specific areas of the curriculum. First, the data reinforce a point made earlier. MCAT correlations within each basic science area are consistently higher when performance is measured by subtests of NBME-Part I. This occurs despite the fact that anatomy, physiology, and biochemistry courses are taken typically in the first year, a full year prior to sitting for Part I of the National Board exams. Undergraduate GPA tends to be more highly correlated in each area with local course grades.

MCAT science scores show particularly strong correlations with performance in two areas of the curriculum: physiology and biochemistry. In fact, the one exception to the generally lower correlations for MCAT Physics is in terms of performance in physiology. The pattern of correlations between MCAT scores and performance in specific areas tends to be consistent with content similarities. MCAT Biology has the highest correlations with course grade performance in anatomy and microbiology. MCAT Chemistry has the highest correlations with performance in biochemistry and pharmacology. In addition to MCAT Chemistry and Science Problems, MCAT Biology, Physics, and SA:Quantitative each show high correlations with performance in physiology. Finally, SA:Reading is the best predictor of performance in behavioral science courses and the behavioral science subtest of NBME-Part I.

These comparisons of correlation values have shown the relative predictive validity of the MCAT subtests in relation to several different performance criteria. Of further interest is the magnitude of these correlations and what that implies about the strength of predictive validity. Any predictive measure with a validity coefficient greater than zero provides some advantage over a random process in selecting students who will perform well. But is the size of these correlations what one would hope for in a measure of this kind?

This question can only be addressed after noting several factors in these studies which artificially constrain the size of the validity coefficients obtained. These include 1) effects due to selection which render the enrolled student samples unrepresentative of the corresponding applicant pools in terms of range of ability; 2) effects of limited variance on the criterion measure; and 3) effects of low reliability of the criterion measure. We have partially dealt with the first factor, referred to as the restriction of range problem, by "correcting" the individual validity coefficients. However, recent research (3) indicates that even these upward adjustments are probably too conservative. They do not provide a substitute for the ideal experiment of studying students randomly selected from the applicant pool. Golmon and Berry (4) in their study of Northwestern students have come closest to this and have shown the dramatic differences that result.

The second factor, the effects of limited variance on the criterion measure, has also been partially dealt with by performing correlational analyses only for those criterion measures with a minimally adequate distribution of student performance. However, Sedlacek and Hutchins (5) demonstrated that even rather small differences between samples with regard to criterion variance are reflected in the size of the validity coefficients obtained.

The third factor, the potential low reliability of certain criterion measures, is based on the psychometric tenet that validity cannot exceed reliability. This applies particularly to course grades or local examination scores, whose reliability is generally unknown. While many of the criteria used in these studies may have high reliability, the presence of even some with low reliability would serve to lower the average of the coefficients obtained.

With these considerations in mind, we can describe certain levels of strength in the predictive validity of MCAT scores. Multiple and individual correlations with National Board scores reflect extremely strong predictive validity. These indices rarely exceed the values shown for measures of this kind. Correlations with first year grades demonstrate fairly strong predictive validity particularly with regard to performance in physiology and biochemistry courses. The incremental predictive validity described earlier, of MCAT scores combined with GPA,is the primary consideration here. The MCAT/GPA combination achieves a level of predictive validity with medical school course grades only slightly less than with NBME-Part I scores. Correlations between individual MCAT subtests and second year grades reflect only moderate to weak predictive validity. However, the predictive validity of the MCAT score composite tends to be in the moderate to fairly strong range.

MCAT validity results tend to be comparable to those found for the other graduate and professional school admission test programs. For example, average observed validity coefficients for the Law School Admission Test (LSAT), with first year law school grades as the criterion, tend to be in the .3 to .4 range (6). Correlations between scores on the Graduate Record Examination (GRE) Aptitude Tests and graduate school grades vary by area of study but average approximately .3. Those for the GRE Advanced Tests tend to be higher, but are still only in the .3 to .4 range (6). Results for the Graduate Management Admissions Test (GMAT) are similar, with median validity coefficients approximately .3 (7). Each of these tests is validated under similar constraints as the MCAT, and the results need to be viewed accordingly.

Conclusion

The MCAT Interpretive Studies program is a major effort by the AAMC to conduct research on the test used in medical school admissions. The results of validity studies conducted through the program thus far tend to support the MCAT's value as a predictive measure in the medical school admission process, and its continued use to the degree that the criterion performance measures that have been studied are deemed important. A systematic examination of research results has revealed some obvious trends. We expect that the identification of these trends will give perspective to validity research being conducted now and in the future. The exceptions to these trends are no less important. As more data accumulate, we plan to study how these exceptions relate to specific characteristics of the school, curriculum, and the nature of performance measures. More data will also allow further study into the methodological factors previously described that hamper accurate validity assessments.

Two further directions for MCAT validity research are in progress. The first relates MCAT scores to absolute measures of success/failure in medical school and measures indicative of academic problems. These include withdrawal/dismissal from medical school for academic reasons, delayed graduation due to repeating courses or deceleration of the academic program, and/or failure to pass Part I of the National Board exams. These data should prove useful to those interested in establishing a threshold at which applicants may equally be expected to satisfy the academic demands of the medical school curriculum.

The second direction for research is to examine the nature and extent of relationships between MCAT scores and measures of performance in the third and fourth year of medical school. These are given the general label of clinical performance measures, although they represent several distinct types. Clinical knowledge measures include scores on NBME-Part II, NBME shelf exams, or other in-house exams, used in the computation of clerkship grades. These measures might reasonably be expected to correlate both with basic science knowledge measures and the MCAT. Clinical skills measures are themselves of two kinds: 1) those that imply a cognitive skill, for example, appropriate emphasis on pertinent facts in history-taking, or the ability to integate clinical information from various sources to identify a problem, and 2) those that are primarily non-cognitive in nature, for example, sensitivity to patient's overall medical and personal problems, effectiveness in securing cooperation of patient and family, etc. Those MCAT subtests which assess skills in gathering, analyzing, and evaluating information may be expected to correlate with the former type of clinical skill measure but not the latter. However, knowing the full implications of using MCAT scores in admissions demands that relationships among all these measures be examined. This is also true with regard to the career choices made by medical students during this period. The AAMC's MCAT Interpretive Studies Program has as its goal to describe this multi-faceted picture of the implications of test use.

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Table 1

Distributions of Multiple Correlations for
GPA, MCAT, and GPA/MCAT Composites
With Year 1 and Year 2 Grades and NBME-Part I*

Predictor Composite		Year 1 Grades	Year 2 Grades	NBME-Part I
GPA†	3rd Q:	.46	.42	.37
	median:	.41	.37	.30
	1st Q:	.34	.27	.23
MCAT	3rd Q:	.49	.44	.63
	median:	.41	.37	.54
	1st Q:	.34	.29	.43
GPA/MCAT	3rd Q:	.58	.56	.68
	median:	.52	.51	.59
	1st Q:	.47	.40	.48

*Year 1 grades are based on 25 samples (classes) at 12 schools; Year 2 grades, 22 samples at 12 schools, and NBME-Part I, 18 samples at 9 schools.

†science GPA and non-science GPA

Table 2

Number and Percentage of Samples (Classes)
For Which GPA, MCAT, and GPA/MCAT Composites
Were Better Predictors of Year 1 and Year 2 Grades and NBME-Part I

Predictor Composite	Year 1 Grades		Year 2 Grades		NBME-Part I	
	N	%	N	%	N	%
GPA better than MCAT	13	52	10	45	0	0
MCAT better than GPA	12	48	12	55	18	100
GPA/MCAT better than GPA alone	25	100	22	100	18	100

Table 3

Median Individual Correlations,
Observed and Corrected for Range Restriction,
for Undergraduate GPA and MCAT Scores
With Year 1 and Year 2 Grades and NBME-Part I*

	Year 1 Grades Median Correlation		Year 2 Grades Median Correlation		NBME-Part I Median Correlation	
Undergraduate GPA	Observed	Corrected	Observed	Corrected	Observed	Corrected
Science	.36	.54	.35	.47	.29	.43
Non-science	.21	.26	.22	.26	.14	.17
Total	.37	.50	.34	.45	.25	.35
MCAT						
Biology	.34	.38	.23	.29	.40	.50
Chemistry	.31	.42	.23	.28	.43	.56
Physics	.26	.29	.14	.16	.34	.37
Science Problems	.31	.39	.22	.27	.43	.50
SA:Reading	.19	.26	.21	.28	.24	.32
SA:Quantitative	.24	.27	.16	.21	.29	.38

*Year 1 grades are based on 34 samples at 18 schools; year 2 grades, 28 samples at 16 schools; and NBME-Part I, 26 samples at 14 schools. Larger numbers than in Table 1 reflects the availability of data from published studies.

Table 4

Number and Percentage of Samples (Classes)
For Which Individual GPA and MCAT Scores Were Best Single Predictors
of Year 1 and Year 2 Grades and NBME-Part I

	Year 1 Grades		Year 2 Grades		NBME-Part I	
Undergraduate GPA	N	%	N	%	N	%
Science	28	82	18	64	21	80
Non-science	0	0	0	0	0	0
Total	6	18	10	36	5	20
	34	100	28	100	26	100
MCAT						
Biology	11	32	6	21	5	19
Chemistry	12	35	8	29	13	50
Physics	1	3	1	4	0	0
Science Problems	5	15	2	7	7	27
SA:Reading	3	9	7	25	1	4
SA:Quantitative	2	6	4	14	0	0
	34	100	28	100	26	100

Table 5

Median Individual Correlations Corrected for Range Restriction for Undergraduate GPA and MCAT Scores with Grades and NBME Scores in Specific Disciplines*

	Anatomy		Physiology		Biochemistry		Pathology		Microbiology		Pharmacology		Behavioral Science	
	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME
Science	.40	.35	.47	.38	.44	.36	.42	.36	.43	.34	.40	.40	.31	.15
Non-science	.21	.10	.24	.08	.25	.08	.23	.20	.24	.10	.22	.18	.26	.16
Total	.39	.29	.42	.29	.39	.29	.41	.35	.39	.27	.40	.29	.34	.18
<u>MCAT</u>														
Biology	.27	.40	.35	.47	.31	.39	.24	.35	.29	.38	.19	.30	.21	.38
Chemistry	.21	.43	.45	.61	.41	.54	.25	.37	.23	.40	.28	.44	.19	.37
Physics	.17	.26	.37	.48	.23	.32	.10	.16	.08	.23	.17	.25	.12	.34
Science Problems	.21	.40	.45	.59	.36	.46	.21	.35	.25	.38	.23	.39	.21	.39
SA:Reading	.11	.17	.22	.27	.14	.16	.21	.25	.21	.26	.23	.19	.34	.51
SA:Quantitative	.14	.26	.33	.42	.23	.27	.12	.18	.19	.21	.15	.22	.21	.44

The University Research Capacity Restoration Act of 1984

The Issue

Concerns about the deteriorating capacity of universities to continue their high level of research effort and productivity because of insufficient resources have prompted Senators Danforth and Eagleton to explore devices whereby federal agencies that support scientific endeavors could significantly increase their funding for the basic sciences and related support elements in university environments.

Background

The conventional Congressional process to channel additional resources into a program is to urge the cognate appropriation committee to increase commitments to that program; if authorization ceilings become limiting; the cognate authorizing committee is importuned to expand their ceilings.

In 1983 the two Senators chose to introduce the University Research Capacity Restoration Act of 1983 (S. 1537). A broadly inclusive legislative proposal with an extraordinarily eloquent "findings and purpose" (attached), it spoke to research funding from the National Institutes of Health, the National Aeronautical Space Administration, the National Science Foundation and the Departments of Energy, Agriculture and Defense. Procedurally, S. 1537 was and is somewhat irregular, with provisions that suggest usurpation of the jurisdiction of multiple authorizing Committees and appropriations subcommittees. Proponents argue that its passage, as an expression of the view of the Congress, would stimulate these concerned committees to take appropriate action. However, it was not, for reasons unknown to the AAMC, cast in the form of a Joint Resolution, the conventional device for expressing the will of the Congress. Because of the timing of the introduction of the bill and other complications, it received relatively little attention in 1983, and there was no companion legislation introduced in the House. For reasons similar to those described below, the AAMC did not support the bill, although it also took no formal stand in opposition to it.

The proposal has now been updated for probable introduction in the House and reconsideration in the Senate. It is intended to facilitate modification in the authorizing legislation of the several agencies. The section related to the National Institutes of Health has been changed so as to recognize the fundamental importance of Section 301 of the Public Health Service Act, the broad and basic authority for support of research in the Public Health Service Act. However, because of apparent technical difficulties in drafting, the bill contains several of the same features which the AAMC staff found objectionable in the earlier version. Those are:

- The use of an authorizing vehicle to attempt to achieve enhanced funding for biomedical and behavioral research. The problem for the Association lies in our vigorous and persistent opposition to any legislation, such as previously been introduced in the House, that would place time or dollar limitations on funding for NIH. Thus, even though the inclusion of the phrase, "...such additional amounts as may be necessary ...," technically modifies the ceiling nature of the $5,213,900,000 previously mentioned in the bill, the Association would clearly be supporting an authorization in one piece of legislation while opposing it on grounds of principle in others.

- The proposal speaks to "FY1985 ... and each of the four succeeding years...," thus introducing at least the concept of a time-limited authority.

- The proposal speaks to "full direct and indirect costs of not less than 5,400 new and competing investigator-initiated research grants..." It seems highly undesirable to introduce such detail in any legislative proposal.

Recommendation

It is recommended that the Executive Council espouse the objectives stated in the "findings and purpose" to the proposal but not support this bill because of the inherent dangers described above.

SUMMARY OF THE UNIVERSITY RESEARCH CAPACITY RESTORATION ACT OF 1983

INTRODUCTION

The purpose of this legislation is to restore and strengthen the capacity of fundamental science research and advanced education programs at the Nation's universities. The bill is a blueprint for this restoration effort; it sets an agenda for a five-year program of increased federal support for university basic science and engineering research and advanced education programs.

The bill has been drafted with the assistance of the Association of American Universities, and it addresses the basic research needs of universities involved in the programs of six federal agencies and departments: NIH, NASA, NSF, and the Departments of Energy, Agriculture, and Defense.

The bill gives these agencies and departments authority (where necessary) and increased funding to implement six objectives:

1. to augment and strengthen federal support for fundamental research programs in basic science and engineering at our nation's universities;

2. to upgrade, modernize, and replace the instrumentation and equipment of university research facilities and laboratories;

3. to provide increased numbers of graduate fellowship awards to individuals and university science departments engaged in federally supported research;

4. to support expanded faculty development programs that promote the initiation of research careers by young university faculty;

5. to support efforts, on a matching basis with the institution involved, to rehabilitate, replace, or otherwise improve the quality of existing university research facilities and laboratories in which federally supported basic science and engineering research is carried out;

6. to modernize and improve undergraduate science and engineering instructional programs and curricula to meet the Nation's changing needs.

The first title of the bill outlines the underlying policy and purpose of this legislation. Each of the other titles is concerned with one of the agencies or departments involved. The intent is to offer the provisions of each of these agency and department titles as amendments to the appropriate authorization or appropriation bills.

A discussion of each of the agency and department titles of the bill follows.

TITLE II--DEPARTMENT OF AGRICULTURE

This title would authorize the appropriation of the following additional funds for basic research in fiscal 1984 and each of the succeeding four years.

- First, this title calls for an additional $15 million above the current level of funding for the Department's Competitive Research Grant Program; these funds go to basic research work by State agricultural experimentation stations, all colleges and universities, and other research institutions for research to further the programs of the Department.

- This title also provides $35 million per year for an instrumentation program to provide for the acquisition and installation of research instrumentation by land grant colleges and universities with the demonstrated capacity to conduct excellent fundamental research of interest to the Department.

- It makes available $35 million per year, on a matching basis, to land grant colleges and universities for a program to modernize, rehabilitate, replace, or otherwise improve the quality of existing laboratories and facilities engaged in Department of Agriculture research.

- It provides $5 million for faculty development awards in fiscal 1984, $10 million in fiscal 1985, and $15 million in each of the following three years. These funds are to be used for career initiation awards to young faculty engaged in food and agriculture research.

- Finally, it provides $10 million in fiscal 1984 for an expanded graduate fellowship program; $20 million in fiscal 1985, and $30 million in each of the following three fiscal years. Each year, this funding is to be divided with half to go to individual grant recipients and half to go to the departments of institutions engaged in Department research.

TITLE VI--NATIONAL INSTITUTES OF HEALTH

This title authorizes annual increases in funding of over $570 million and such additional sums as may be necessary to restore the capacity of NIH to conduct and support biomedical research in fiscal year 1984, and each of the succeeding four years. The bill provides that the annual increase is to be used for the following purposes:

- To support basic research by (1) providing the full direct and indirect costs of not less than 5,400 new and competing, investigator-initiated research grants; (2) by restoring the NIH study sections recommended levels for noncompeting grants; (3) by providing additional grants for research centers; and (4) by providing additional funds for biomedical research support grants;

- To provide additional amounts for the agency's instrumentation program to be used to provide instrumentation in support of NIH biomedical research;

- To support laboratory rehabilitation by making funds available, on a matching basis, for a program of modernization and rehabilitation of existing laboratories and facilities engaged in biomedical research supported or conducted by NIH;

- To provide career development awards for young faculty engaged in fields related to NIH research;

- To provide additional individual and institutional NIH National Research Service awards.

ADVANCEMENT OF WOMEN IN ACADEMIC MEDICINE

The Association has been approached by the American Council on Education's Office of Women in Higher Education about co-sponsoring one of ACE's periodic National Identification Programs for the Advancement of Women in Higher Education Administration. Under this program, periodic forums are arranged to which twenty women and ten men academic administrators are invited. The women are usually in senior but not top administrative positions, and are presumably ready to be tapped for institutional leadership positions. The men are already institutional leaders and presumably individuals who may be asked for recommendations when leadership positions are vacant.

The format of the day and a half NIP workshops is fairly unstructured. There are three sessions broadly dedicated to the discussion of national issues, institutional issues, and personal development and advancement. During these discussions the men meet the women, learn about their talents and knowledge, and it is hoped, return to their institutions with a new list of women whom they might recommend when queried by search committees.

ACE has conducted more than 20 of these national identification programs. Of the nearly 600 women who have participated, 31 have become institutional presidents and 150 have taken new jobs in senior level positions in educational institutions.

The proposed joint ACE-AAMC program would be directed solely to advancement in academic medical centers rather than to higher education in general. The cost to the Association would be under $1,000 if we supported only certain administrative costs or as much as $10,000 if travel costs of some participants were covered.

In discussing the proposed program among staff, with Dr. Stemmler, and with some senior level women, the following concerns were raised:

--Is this the best method for fostering the advancement of women in academic medicine administration?

--Would our constituents be likely to participate or is this effort too self-conscious?

--While this mechanism seems to have worked for colleges and universities, would it work in academic medicine where the community is much smaller and already has channels of communication?

--Is the limiting factor in the overall advancement of women the need to make individual women more widely known or is it that there are too few women available?

Everyone involved in the discussions felt it was appropriate for the Association to support the advancement of women, and the main focus of the discussion became identifying the most effective ways of achieving those goals. Currently the Association's major efforts in this area have been:

--Executive Development Seminars for Women in Academic Medicine: These are modeled on the regular MEP seminars. Four have been held with just over 100 women attending. No additional seminars are currently scheduled.

--Faculty Roster: This database is used to generate lists of qualified women for search committees. Despite some major shortcomings, since its inception in 1980 this program has responded to more than 700 requests.

In addition to holding the National Identification Program as a separate meeting, other possibilities for Association action were suggested:

--A modification of NIP using the COD Board as the male leaders rather than having an invitational conference.

--Holding the NIP forum in conjunction with the annual meeting.

--Compiling a roster of women in senior positions which could be used in making recommendations to institutions when asked for nominees or sent unsolicited to institutions with vacancies.

--Making a conscious effort to schedule more women speakers at AAMC and COD meetings.

--Seeking funds to support a visiting lectureship program for women faculty.

--Including questions about the status of women faculty in the institutional self-study conducted during the accreditation process.

The COD Board is asked to consider what might be appropriate action for the Association in this area, and, at a minimum, decide whether the AAMC should accept the ACE invitation to co-sponsor a National Identification Program forum.

D R A F T

COUNCIL OF DEANS - ISSUES IDENTIFICATION

Stimulated by the appearance of the paper, "New Challenges for the Council of Teaching Hospitals and Department of Teaching Hospitals," the Council of Deans' Administrative Board requested that the staff of the Department of Institutional Development prepare a document outlining the issues facing medical school deans and their implications for the Council of Deans as a constituent part of the AAMC, and for the AAMC itself.

What follows is an initial and very preliminary draft of such a document. It is derived in large measure from the discussion at the Council of Deans' Administrative Board Meeting held March 16, 1984.

Background

The past twenty years have been a period of remarkable growth for medical schools: a fifty percent increase in the number of institutions, a 100 percent increase in medical school enrollments, and a 300 percent growth in the number of full-time faculty. Financial support of U.S. medical schools (1960-61 through 1981-82) has grown over 500 percent, from $436 million to $2,351 million. The proportion from tuition and fees has remained constant at six percent, while state and local support has risen from 17 percent to 22 percent. The most dramatic shift has been a rise in the dependence on medical service income from six percent to over thirty percent. Federal research support has dropped from 31 to 22 percent of the medical school budgets, while other Federal support has dropped from 10 to 6 percent.

The Graduate Medical Education National Advisory Committee (GMENAC) predicted that there will be a significant surplus of physicians in the U.S. by 1990. By that year, the physician to population ratio is expected to exceed 220 per 100,000 and by the year 2000, reach 247 per 100,000. Levels in 1960 and 1978 were 141 and 171 per 100,000 respectively. While there is no universally agreed upon calculus by which need can be determined, it does appear that the large number of physicians being prepared is having an impact on the economics of medical practice and on both the geographic and specialty distribution of physicians.

Notwithstanding this dramatic growth of capacity of the U.S. for providing medical education for its citizens, ever larger numbers are enrolling in foreign schools. While we have no direct figures on foreign matriculants, several indirect measures give some assessment of the magnitude:

- the number of U.S. citizens who have graduated from foreign schools and seek certification to enter graduate medical education in the U.S. through NRMP rose from 860 in 1974 to 2,793 in 1982;
- In 1982, 1826 U.S. nationals enrolled in foreign medical schools sought advanced placement in U.S. schools (1,337 of these came from seven proprietary schools located in Mexico and the Carribean);
- It is estimated that more physicians licensed in Illinois in recent years have graduated from foreign schools than from U.S. schools;
- The 1980 GAO Report estimated a foreign school enrollment of between 8,000 and 11,000.

We have now entered a period of cost consciousness. Efforts are being made to restrain governmental outlays by regulations, encouragement of competition or straightforward budget cutbacks. Most notable, perhaps, is the effort to constrain the growth of Medicare expenditures through prospective pricing of hospital care for Medicare beneficiaries on the basis of statistically generated norms. This shift from retrospective cost reimbursement places new management imperatives on the hospitals and their medical staffs which, in turn, may place new constraints on the ability and/or motivation of the hospital to continue historic and traditional missions related to education, research, and provision of care to the indigent. The NIH budget does not appear as robust as in times past, and programs for institutional support of medical schools and financial assistance for medical students have disappeared or are markedly diminished.

The Issues

The issues facing deans and thus, the Council of Deans, in large measure, mirror these developments; the size, cost, and quality of the enterprise are uppermost on everyone's mind. In times of plentiful resources, objectives related to effectiveness predominate; in times of scarcity, efficiency objectives gain more prominence. Thus, efficiency now appears to have gained the upper hand, but efficiency in service of trivial objectives is of no service to society nor does it contribute to the traditional missions of academic medicine. Thus, the first questions to be asked should be mission oriented; the one mission which characterizes all medical schools and academic medicine centers is undergraduate medical education.

Undergraduate Medical Education

The quality of undergraduate medical education is the subject of an entire day's discussion at the Spring Meeting; its enhancement is the objective of the GPEP project; its preservation is the principal object of the LCME (now considering revised set of minimum standards).

Chief among the criticisms of medical education is the charge of information overload and the lack of an organized attack on the problem:

- Are we devoting sufficient attention to limiting the burden of unproductive short-term, fact memorization?
- Are we preparing students for independent learning to handle the accelerating growth knowledge from biomedical research?
- Are we developing appropriate conceptual tools and problem solving skills?
- Are we fostering high ethical standards and humanistic values?
- Is the faculty devoting adequate time to its academic responsibilities, particularly with respect to undergraduate medical students?

Recruitment and Admissions

Some observers, focusing on the decline of the applicant pool, (from a peak of 42,624 in 1974-75 to 36,730 in 1982-83), anticipate a problem of recruitment to the medical profession. They cite a number of factors:

- perceptions of a loss of status of the profession;
- difficulty in financing an education;
- concern that a physician surplus will constrain practice opportunities and limit ability to pay off sizable debts;
- fear that physician numbers will require a competitive life style, highly entrepreneurial and marketing oriented;
- observation that specialty choice may be constrained.

Questions of sociologic and economic diversity of those entering the study of medicine persist. Many minority students have experienced both personal and financial difficulties in attempting this career and fewer students from under-represented backgrounds are considering the field viable.

Are we using appropriate criteria and asessment instruments for admission decisions?

Size

How do we best respond to perceptions that the academic medical enterprise is too large and costly?

- What are the implications of reducing class size?
- How can program reconfigurations strengthen rather than weaken institutions?
- Are faculties larger and more costly than necessary or appropriate?

Financing

What are the implications of contemporary medical school financing being so heavily dependent on income derived from professional medical services?

Are hospitals and clinical faculty members becoming too preoccupied with financial matters at the expense of academic considerations?

Are faculty practice plans organized and operated in a way which best serves the academic mission of the institution?

Organization

Is the medical center organized in a way which both permits appropriate differentiation of responsibilities for patient care, research and education and fosters adequate integration of these tasks to permit them to be accomplished effectively and efficiently?

Graduate Medical Education

Are there adequate positions available to provide appropriate graduate medical education opportunities for our graduates?

Is the process of specialty selection and GME placement sound?

Foreign Medical Graduates

Are there adequate screening mechanisms to prevent unqualified graduates of foreign medical schools from undermining the quality of medical care in this country? Of graduate medical education programs for which we are responsible?

Licensure

Does the impending replacement of the National Board of Medical Examiners Examination by FLEX I and II pose the threat of impermissible control of medical education by state licensing boards?

Quality of Care

With the current concentration on cost cutting strategies are we likely to see the adequacy of quality of medical care as a major future issue?

- Are we appropriately positioned to assess quality?
- What indicators should be developed and monitored?
- What resources should be devoted to such tasks? How directed?

Research

Aside from funding, ethical issues related to the conduct of research are among the most prominent. Are we appropriately positioned to deal with questions regarding:

- The probity of investigators?

- The treatment of human subjects of research?
- Of animal subjects?

With the prospect of increasing interconnections between industry and academic medicine, have we developed the appropriate culture, infrastructure or ethic to assure that the involvement assists rather than detracts from our ability to carry out fundamental missions?

Proprietary Hospitals

Fourteen member medical schools have affiliation (or closer) relationships with for-profit or investor owned hospitals. In at least one case (University of Louisville) such a hospital is the school's primary teaching hospital. Under current AAMC rules, these hospitals are ineligible for COTH membership. Should a mechanism be found for including such hospitals in the AAMC?

ROLE OF AAMC

With respect to each of the issues identified, the role of the AAMC needs to be assessed. Is there a role and what should it consist of? The COTH paper sets out the following framework for analysis:

"Associations of autonomous service and business entities, generally focus their activities on one or more of five goals.

Advocacy--the association works to advantage its members by obtaining favorable or avoiding unfavorable treatment from the environment in which it operates. Advocacy activties may be directed at the political process (legislative and executive) or at the private sector environment.

Economic--the association works to develop programs and member services designed to improve the efficiency and profitability of its members. Examples of such programs include group purchasing, standardized operating procedures, and multi-firm benefit and personnel programs.

Information--the association provides its members with a convenient and reliable network designed to furnish members with significant information on developments in the environment. To the extent that members are willing to share internal information with each other, the association provides a means of facilitating the exchange of "within member developments."

Education--the association develops educational programs specifically designed to meet the specialized needs of its members.

Research--the association develops an organized program to monitor the performance of its members, to develop methods or techniques which can be used by all members, and/or to identify early developments likely to affect the environment in which a member operates.

In most associations, each of these goals is present. Differences in associations seem to reflect differences in the emphasis given a particular goal and in the balance of activity across the five goals."

Governance of the AAMC and the COD

As a result of the Coggeshall Report, Planning for Medical Progress Through Education, completed in April of 1965, the AAMC was reorganized to formally involve teaching hospitals and academic societies in its governance. Thereupon, the old "deans club" was rapidly transformed into an organization with the specific objective of initiating continuous interaction between the leadership of all components of the modern medical center. While much was achieved as a result of this transformation, there have been costs as well. Perhaps chief among these has been that the deans' sense of personal involvement with their organization has been attenuated. The 50 percent increase in the number of schools greatly added to the difficulty of the deans personally, and the AAMC as an organization in maintaining effective communications. But numbers alone were not the problem; increasing diversity added to the complexity as well. New schools consciously adopted a non-traditional approach to teaching, faculty, and relationships to hospitals. New interest groups were formed, as deans and others sought colleagueship and help from others whose situation resembled their own. Though the AAMC retained its name, and recognized the primacy of its medical school constituency by preserving a plurality of deans as voting members of the Executive Council, the sheer number of those involved in policy making for the organization has inevitably led to a diminution of the intimacy previously felt.

The diversity of interests represented and the complexity of the issues required new integrating mechanisms, more bureaucratic procedures and sometimes intricate decision making processes. The multitude of enviromental factors impinging on medical education, biomedical research and patient care, together with the rapidity with which developments occur required a full-time professional staff not otherwise occupied by responsibilities for managing institutions. Staff played an increasingly prominent role not only in coordinating the processes, but in identifying issues, analyzing their implications and proposing responses as well. On urgent matters, such as legislative developments requiring rapid response, the process often directly engaged only the Council's officers, some of the most directly affected members and/or those with possible legislative influence. The membership at large sometimes was unaware of the deliberations until after the decisions had been made, or they were asked to respond only after directions had been well established and there appeared little possibility of exerting significant influence.

Several specific strategies have been designed to advance the objective of assuring that the Council of Deans serves as the deans professional society:

- The COD Spring Meeting with its mix of program, business and unscheduled time designed to facilitate maximum interchange among the deans.
- The establishment of the AAMC's Management Education Programs recently recast to emphasize the continuing education function of the program.
- The new deans "package" and orientation program.

Most recently the Board has considered approaches which would enhance this objective:

- A proposed new session at the annual meeting emphasizing dialogue and deliberation in contrast to routine business and reports.
- A new level of responsibility and accountability on the part of the Board members for communication with the membership as a whole.
- Acceptance of a greater level of responsibility on the part of Board members for the initiation of new Council members into the club.

Issues:

- Are the affairs of the Council of Deans conducted so as to realize the goal of the Council serving as the deans' professional organization?
  - Are approprite meeting sites chosen, issues identified, speakers selected, opportunities for effective dialogues offered?
  - Do appropriate mechanisms exist for involving the deans in AAMC issue selection and analysis? Policy setting deliberations?
  - Are the deans adequately informed of AAMC activties?
  - Are the deans adequately staffed and given support for their involvement in AAMC programs?
- With respect to the AAMC as a whole, is there a proper balance between its various programmatic activties?

Datagram Proposal

MCAT Scores and Student Progress in Medical School

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MCAT Scores and Student Progress in Medical School

An article appearing in this issue of the Journal summarizes correlations found between Medical College Admission Test (MCAT) scores and student achievement in the first two years of medical school, as measured by course grades and scores on the National Board of Medical Examiners (NBME) Part I examination. A validity question of further practical import to admissions committees is how MCAT scores relate to the probability of a student having academic problems that delay or impede their progress through medical school. As with most questions of test validity, this is best answered from local institutional experience with the scores. However, local studies are inevitably hampered by the low incidence of students who experience academic problems, due presumably to the effective use of various measures of academic achievement and student motivation in selection. The purpose of this datagram is to demonstrate the relationship between MCAT performance and student progress through medical school for the enrolled medical student population as a whole. While such a data aggregation may mask differences between institutions, it should provide some perspective for schools interested in establishing a minimum threshold level of performance at which a student may reasonably be expected to satisfy the demands of the medical school curriculum in the normal time.

The population studied includes all students who entered in 1978 and 1979 the 126 medical schools accredited by the Liaison Committee on Medical Education (LCME). Academic status records of each student are maintained in the Association of American Medical Colleges (AAMC) Student Records Systems, beginning with the matriculation date and continuing until there is a record of graduation or other termination. Changes in status are provided periodically by the schools to the AAMC. The majority of students entering in 1978 and 1979 were expected to graduate in either 1982 or 1983, respectively.

From information contained in the Student Records System, the authors grouped students into five categories: 1) graduated on time; 2) delayed graduation--academic reasons; 3) delayed graduation--non-academic reasons; 4) withdrawal/dismissal--academic reasons; and 5) withdrawal/dismissal--non-academic reasons.

Students were classified in Group 1 if their actual graduation date was no later than two months subsequent to their original expected graduation date indicated at the time of matriculation. While these may include students who experienced some academic problems in medical school, they would be students who managed to rectify the problems in time to graduate with their class. Students who graduated later than the expected date or who continue to be enrolled were classified in Groups 2 or 3. Those students who took a leave of absence for non-academic reasons, for example, for health reasons, were placed in Group 3. The remaining students who maintained continuous enrollment were presumed to have decelerated their program or made to repeat part of the curriculum, because of academic difficulties. These assumptions were necessary because direct designations of the reasons for changes in expected graduation dates are not provided for in the reporting system. Students who withdrew or were dismissed from medical school were classified in Groups 4 or 5, depending upon whether the school reported that the withdrawal/dismissal was for academic or non-academic reasons. Exceptions were those students who subsequently re-entered medical school. These were classified in Groups 2 or 3, depending upon the reasons for the withdrawal/dismissal. In order to classify students into these five categories, students enrolled in BA/MD, MD/JD, or MD/PhD programs, and others whose original expected graduation date was later than November 1983, were dropped from the analyses, since graduation data would not have been available at the time the analyses were performed. In addition, students who died during the period are not included in the tables that follow.

Findings

Tables 1 through 6 show the number and proportion of students at each MCAT score level who were classified into each of these five groups. The results indicate that 88.2% of the 1978 and 1979 first year entrants graduated on time. A total of 8.3 percent had their graduation delayed, 5.4% for academic reasons and 2.9% for non-academic reasons. Of the 3.4 percent of students who either withdrew or were dismissed, 1.3% were for academic reasons while 2.1% were for non-academic reasons. Examination of the tables reveals a positive relationship between performance on the MCAT and graduating on time. This association is due to an inverse relationship between MCAT performance and both delayed graduation for academic reasons and withdrawal/dismissal for academic reasons. The proportion of students withdrawing or delaying progress for non-academic reasons tends to be fairly uniform across the range of MCAT scores. The probabilty of experiencing academic difficulties shows little variation for those students achieving scores between 8 and 15 on the MCAT subtests. However, for those scoring below 8, the probability of encountering academic problems tends to increase systematically as MCAT scores decrease.

Figure 1 illustrates further the relationship between MCAT performance and the likelihood of experiencing academic problems by comparing scores for the Science Knowledge and Science Problems subtest with those for the Skills Analysis subtests. For simplicity of presentation, students whose academic problems caused a delay of graduation or withdrawal/dismissal are grouped together, and MCAT scores are averaged within science versus skills areas. For both averages, the likelihood of a student experiencing academic problems increases consistently as scores decline below 8. The increase tends to be slightly more pronounced as the Science Knowledge and Science Problems scores decline. Since academic problems tend to surface in the first year of medical school, this finding is not surprising. Both for the old and new MCAT, the strongest correlations with first year performance have been found for MCAT scores in science areas of assessment.

A final note to be made on the tables and figure is that even at the very lowest levels of MCAT performance, approximately half of the small numbers of students who were accepted were successful in graduating from medical school on time. This appears to reflect the effectiveness of admissions committees in identifying other factors in addition to MCAT scores that predict student success. It also argues against using MCAT scores absolutely and rigidly in admissions decisions, but as contributing information to a complete applicant profile.

MCAT *Biology* Scores and Medical Student Progress -

1978 and 1979 First Year Entrants

MCAT Biology	All Entrants* N	All Entrants* % of Total	Graduated on Time N	Graduated on Time %	Delayed Graduation Academic** N	Delayed Graduation Academic** %	Delayed Graduation Non-Academic† N	Delayed Graduation Non-Academic† %	Withdrawal/Dismissals Academic N	Withdrawal/Dismissals Academic %	Withdrawal/Dismissals Non-Academic N	Withdrawal/Dismissals Non-Academic %
12-15	3663	11.7	3324	90.7	160	4.4	103	2.8	11	0.3	65	1.8
11	5341	17.0	4844	90.7	201	3.8	156	2.9	19	0.4	121	2.3
10	7052	22.5	6431	91.2	287	4.1	175	2.5	48	0.7	111	1.6
9	6219	19.8	5571	89.6	273	4.4	194	3.1	54	0.9	127	2.0
8	4256	13.6	3700	86.9	254	6.0	122	2.9	84	2.0	96	2.3
7	2502	8.0	2096	83.8	180	7.2	86	3.4	64	2.6	76	3.0
6	1550	4.9	1176	75.9	187	12.1	48	3.1	85	5.5	54	3.5
5	485	1.5	334	68.9	94	19.4	15	3.1	30	6.2	12	2.5
4	186	0.6	108	58.1	49	26.3	5	2.7	20	10.8	4	2.2
3	66	0.2	35	53.0	15	22.7	8	12.1	6	9.1	2	3.0
2	18	0.1	9	50.0	4	22.2	2	11.1	1	5.6	2	11.1
1	1	0.0	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
TOTAL	31339	100.0	27628	88.2	1705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

MCAT *Chemistry* Scores a[illegible]edical Student Progress – 1978 and 1979 First Year Entrants

MCAT Chemistry	All Entrants*		Graduated on Time		Delayed Graduation				Withdrawal/Dismissals			
					Academic**		Non-Academic†		Academic		Non-Academic	
	N	% of Total	N	%	N	%	N	%	N	%	N	%
12-15	5629	18.0	5034	89.4	257	4.6	196	3.5	11	0.2	131	2.3
11	5193	16.6	4740	91.3	200	3.9	137	2.6	26	0.5	90	1.7
10	5776	18.4	5264	91.1	235	4.1	142	2.5	38	0.7	97	1.7
9	5383	17.2	4849	90.1	233	4.3	133	2.5	49	0.9	119	2.2
8	4060	13.0	3587	88.3	204	5.0	108	2.7	71	1.7	90	2.2
7	2668	8.5	2239	83.9	186	7.0	96	3.6	83	3.1	64	2.4
6	1493	4.8	1193	79.9	174	11.7	49	3.3	47	3.1	30	2.0
5	705	2.2	488	69.2	102	14.5	36	5.1	52	7.4	27	3.8
4	317	1.0	178	56.2	84	26.5	11	3.5	29	9.1	15	4.7
3	90	0.3	48	53.3	22	24.4	3	3.3	12	13.3	5	5.6
2	23	0.1	7	30.4	7	30.4	3	13.0	4	17.4	2	8.7
1	2	0.0	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
TOTAL	31,339	100.0	27,628	88.2	1,705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

MCAT *Physics* Scores and Medical Student Progress – 1978 and 1979 First Year Entrants

MCAT	All Entrants*		Graduated on Time		Delayed Graduation				Withdrawal/Dismissals			
					Academic**		Non-Academic†		Academic		Non-Academic	
Physics	N	% of Total	N	%	N	%	N	%	N	%	N	%
12-15	5607	17.9	5004	89.2	264	4.7	175	3.1	31	0.6	133	2.4
11	4024	12.8	3693	91.8	141	3.5	94	2.3	15	0.4	81	2.0
10	5090	16.2	4630	91.0	197	3.9	145	2.8	30	0.6	88	1.7
9	6769	21.6	6123	90.5	294	4.3	164	2.4	66	1.0	122	1.8
8	4436	14.2	3862	87.1	251	5.7	143	3.2	76	1.7	104	2.3
7	2808	9.0	2374	84.5	207	7.4	92	3.3	67	2.4	68	2.4
6	1508	4.8	1191	79.0	159	10.5	58	3.8	63	4.2	37	2.5
5	768	2.5	551	71.7	119	15.5	31	4.0	40	5.2	27	3.5
4	292	0.9	181	62.0	60	20.5	12	4.1	29	9.9	10	3.4
3	35	0.1	18	51.4	12	34.3	0	0.0	5	14.3	0	0.0
2	2	0.0	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	31,339	100.0	27,628	88.2	1,705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

**Includes repeaters, students in decelerated programs, and academic withdrawals/dismissals who re-entered medical school.

†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

MCAT *Science Problems* Scores and Medical Student Progress–

1978 and 1979 First Year Entrants

MCAT Science Problems	All Entrants* N	All Entrants* % of Total	Graduated on Time N	Graduated on Time %	Delayed Graduation Academic** N	Delayed Graduation Academic** %	Delayed Graduation Non-Academic† N	Delayed Graduation Non-Academic† %	Withdrawal/Dismissals Academic N	Withdrawal/Dismissals Academic %	Withdrawal/Dismissals Non-Academic N	Withdrawal/Dismissals Non-Academic %
12-15	4800	15.3	4293	89.4	230	4.8	148	3.1	12	0.3	117	2.4
11	5581	17.8	5112	91.6	192	3.4	154	2.8	24	0.4	99	1.8
10	5707	18.2	5206	91.2	221	3.9	145	2.5	44	0.8	91	1.6
9	7017	22.4	6273	89.4	325	4.6	202	2.9	69	1.0	148	2.1
8	3747	12.0	3300	88.1	202	5.4	98	2.6	66	1.8	81	2.2
7	2306	7.4	1895	82.2	196	8.5	74	3.2	72	3.1	69	3.0
6	1412	4.5	1081	76.6	179	12.7	52	3.7	61	4.3	39	2.8
5	497	1.6	322	64.8	90	18.1	28	5.6	44	8.9	13	2.6
4	224	0.7	125	55.8	55	24.6	10	4.5	24	10.7	10	4.5
3	42	0.1	19	45.2	12	28.6	3	7.1	5	11.9	3	7.1
2	6	0.0	2	33.3	3	50.0	0	0.0	1	16.7	0	0.0
1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	31,339	100.0	27,628	88.2	1705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

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Source: Association of American Medical Colleges, DEMR, March, 1984.

MCAT *SA:Reading* Scores and Medical Student Progress-
1978 and 1979 First Year Entrants

MCAT SA:Reading	All Entrants*		Graduated on Time		Delayed Graduation				Withdrawal/Dismissals			
					Academic**		Non-Academic†		Academic		Non-Academic	
	N	% of Total	N	%	N	%	N	%	N	%	N	%
12-15	2651	8.5	2378	89.7	123	4.6	84	3.2	9	0.3	57	2.2
11	4130	13.2	3705	89.7	181	4.4	124	3.0	17	0.4	103	2.5
10	8452	27.0	7643	90.4	348	4.1	231	2.7	68	0.8	162	1.9
9	5921	18.9	5310	89.7	271	4.6	167	2.8	56	0.9	117	2.0
8	5384	17.2	4768	88.6	286	5.3	137	2.5	81	15.	112	2.1
7	2749	8.8	2332	84.8	201	7.3	87	3.2	61	2.2	68	2.5
6	868	2.8	694	80.0	77	8.9	30	3.5	37	4.3	30	3.5
5	691	2.2	492	71.2	110	15.9	34	4.9	43	6.2	12	1.7
4	249	0.8	162	65.1	47	18.9	15	6.0	22	8.8	3	1.2
3	144	0.5	86	59.7	34	23.6	4	2.8	18	12.5	2	1.4
2	53	0.2	30	56.6	14	26.4	1	1.9	5	9.4	3	5.7
1	47	0.1	28	59.6	13	27.7	0	0.0	5	10.6	1	2.1
TOTAL	31,339	100.0	27,628	88.2	1,705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

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†Includes those who took leaves of absence or delayed progress in transferring.

Source: Association of American Medical Colleges, DEMR, March, 1984.

MCAT SA:Quantitative Scores and Medical Student Progress - 1978 and 1979 First Year Entrants

MCAT	All Entrants*		Graduated on Time		Delayed Graduation				Withdrawal/Dismissals			
					Academic**		Non-Academic†		Academic		Non-Academic	
SA:Quantitative	N	% of Total	N	%	N	%	N	%	N	%	N	%
12-15	4098	13.1	3685	89.9	197	4.8	112	2.7	18	0.4	86	2.1
11	5717	18.2	5129	89.7	241	4.2	183	3.2	36	0.6	128	2.2
10	6020	19.2	5416	90.0	271	4.5	175	2.9	39	0.6	119	2.0
9	5788	18.5	5241	90.5	231	4.0	151	2.6	57	1.0	108	1.9
8	4205	13.4	3755	89.3	199	4.7	102	2.4	56	1.3	93	2.2
7	2525	8.1	2189	86.7	161	6.4	73	2.9	49	1.9	53	2.1
6	1404	4.5	1120	79.8	153	10.9	42	3.0	53	3.8	36	2.6
5	980	3.1	720	73.5	131	13.4	44	4.5	57	5.8	28	2.9
4	384	1.2	247	64.3	73	19.0	20	5.2	30	7.8	14	3.6
3	159	0.5	99	62.3	35	22.0	10	6.3	12	7.5	3	1.9
2	48	0.2	21	43.8	13	27.1	2	4.2	11	22.9	1	2.1
1	11	0.0	6	54.5	0	0.0	0	0.0	4	36.4	1	9.1
TOTAL	31,339	100-0	27,628	88.2	1705	5.4	914	2.9	422	1.3	670	2.1

*A total of 32,354 students were identified as 1978 and 1979 first year entrants. This table excludes 551 students enrolled in BA/MD, MD/MA, MD/PhD, and MD/JD programs, 51 students who are deceased, and 413 students without new MCAT scores.

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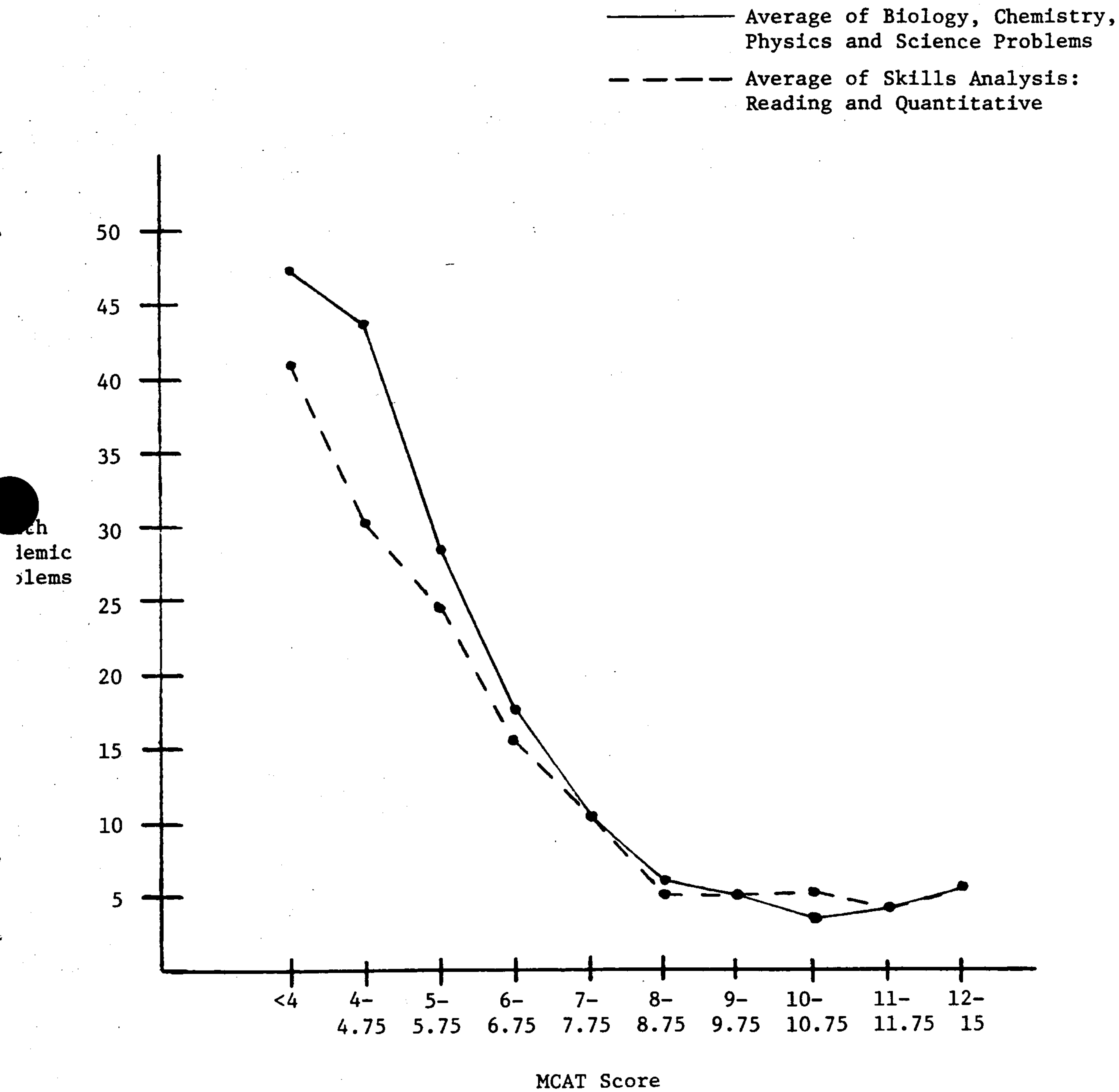

Figure 1

Percentage of students having academic problems in medical school by Medical College Admission Test (MCAT) scores - 1978 and 1979 entering classes.

association of american medical colleges

VALIDITY OF THE MCAT FOR PREDICTING PERFORMANCE IN THE FIRST TWO YEARS OF MEDICAL SCHOOL

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ABSTRACT

The authors present the first systematic summary of predictive validity research on the new Medical College Admission Test (MCAT) since its introduction in 1977. Data are drawn primarily from the MCAT Interpretive Studies Program, a cooperative effort between the AAMC and thirty of its member schools to conduct research that will both facilitate local use of the test scores and contribute to a national perspective on their value in medical school admissions. The results show that MCAT scores by themselves have significant predictive validity with respect to first and second year medical school course grades and NBME-Part I scores, and that they complement the predictive validity of undergraduate college grades. The MCAT science areas of assessment, particularly Biology, Chemistry, and Science Problems, tend to have higher correlations with initial performance in medical school, but the Skills Analysis:Reading subtest may retain its predictive value best over time. Correlation values are discussed in terms of methodological factors which constrain their size. They are also compared to those found for other professional and graduate school admissions tests. Future directions for MCAT validity research are described.

Beginning with the first use of the new Medical College Admission Test (MCAT) for selecting entrants to medical school in 1978, there has been great interest in studies designed to assess the test's predictive validity. Eleven such studies have appeared in the Journal of Medical Education alone during 1979-1983, with many more the topic of presentations at professional meetings (1). The Association of American Medical Colleges (AAMC), sponsors of the MCAT, has shared this interest. In 1980, the AAMC began the MCAT Interpretive Studies Program, a cooperative effort with 30 selected schools of medicine to conduct validity research on the MCAT. The purpose of this paper is to provide a preliminary summary of the MCAT validity evidence to date as it relates to performance in the first two years of medical school.

There are as many questions that can be addressed concerning MCAT validity as there are specific inferences to be made from the scores. Our purpose in this summary is to address some validity questions of general interest. The answers may not apply to each situation, but reveal general patterns in the ability of MCAT scores to predict the performance of students in the basic medical sciences. Five commonly posed questions or sets of questions in this regard are:

1) How does the predictive validity of MCAT scores in relation to performance in the basic medical sciences compare to that of undergraduate grade point average (GPA)?

2) Does the MCAT contain unique information, not already provided by undergraduate GPA, that aids in the prediction of students' performance? To what degree?

3) What is the relative predictive validity of the individual MCAT scores in relation to performance in the basic medical sciences?

4) What is the relative predictive validity of the individual MCAT scores in relation to performance in specific areas?

5) How strong is the predictive validity of MCAT scores? Does it meet the standards that should be expected of a measure of its kind? How does it compare to that of other graduate and professional school admission tests?

Procedures

To answer these questions, results of studies were available from half (15) of the schools participating in the MCAT Interpretive Studies program. Results from published studies at five other schools which were comparable in terms of the statistical indices used, were added to this collection. Eighteen of these are U.S. medical schools, 13 public and 5 private. Two are Canadian schools. Most (16) of the schools have a traditional, discipline-oriented curriculum in the first two years, 2 use an organ systems approach, and 2 provide a mix of straight discipline courses and organ systems units. Studies were conducted separately by class, primarily those entering in 1978 and 1979, with most schools contributing data from more than one class. However, not all types of criteria measures or statistical indices were available from all schools.

Criterion performance measures for the first two years were classified along several lines. Summary measures of first-year or second-year performance were designated year 1 grades and year 2 grades, respectively. These included criteria such as grade-point average for courses taken in a given year, class rank, or scores on an end-of-year comprehensive examination. These criteria are important for MCAT validity studies because they reflect locally determined standards of student performance. Total scores on the National Board of Medical Examiners (NBME) Part I examination provide another summary measure of performance in the basic medical sciences. NBME-Part I derives its importance as a criterion for MCAT validity studies from its current role in procedures for physician licensure. Subtests of NBME-Part I were also used as criteria to study relationships between MCAT scores and peformance in specific disciplines. Local course grades or examination scores were grouped similarily by the disciplines represented in the NBME subtests. Grades in interdisciplinary courses were too infrequently used as criteria to be examined separately in this summary.

Two statistics commonly used in predictive validity studies to index the relationship between test scores and criterion measures provide the "raw data" for this preliminary summary. The first is the simple Pearson product-moment correlation coefficient (r) or validity coefficient. Pearson correlations were computed for each MCAT scale and each undergraduate GPA measure (science, nonscience, total), with each criterion measure whose underlying measurement scale allowed (for example, honors- pass-fail grades were not analyzed in this fashion).

Since these correlations were based on enrolled student samples which, by virtue of the selection process, are quite homogeneous with respect to the predictive measures being studied, they were then "corrected" for restriction of range by a commonly used formula (2). Corrected correlations attempt to estimate what the observed correlations would be if all applicants to the school, not just the more homogeneous group of enrolled students, were studied. A second index is the multiple correlation coefficient. This is the Pearson correlation that results when a group of predictor variables are combined in an optimal way and related to a criterion measure. Multiple correlations were computed with all summary criterion measures, year 1 and 2 grades, NBME Part I total, for 1) the six MCAT scores combined, 2) the two independent GPA measures (science and non-science) combined, and 3) the MCAT scores and GPA measures combined. The size of these multiple correlations is similarly constrained by the limited range of performance on the predictive measures shown in the enrolled student samples.

However, a correction formula for multiple correlations is not available.

Results and Discussion

Table 1 displays the distributions of multiple correlations computed with year 1 grades, year 2 grades, and NBME-Part I, while Table 2 compares the percentage of times GPA or MCAT composites were better predictors. Table 3 displays the average individual correlations or validity coefficients for these same criteria. Table 4 gives the percentage of times individual GPA and MCAT scores were the best single predictors. Table 5 shows the average validity coefficients for criteria classified by basic science area and method of evaluation. Even at this early stage in the accumulation of data, certain patterns or trends are evident which relate to the questions posed previously.

Tables 1 and 2 show that whether MCAT scores or undergraduate GPA are better predictors depends upon the criterion being considered. When the criteria are medical school course grades, MCAT scores in combination are similar to undergraduate grades in their predictive value. Median multiple correlations are identical, and within any one sample either predictor group was about equally likely to show a higher multiple correlation. However, as shown in Table 3, no single MCAT score tends to be correlated as highly as undergraduate science GPA. When the criteria are NBME-Part I scores, MCAT scores in combination (Table 1) are substantially better predictors of performance. This was true of every sample studied

(Table 2). Moreover, several MCAT scores individually (Table 3) were the best single predictors of NBME performance, in terms of their average correlation.

The data in Tables 1 and 2 also bear on the second validity question which concerns the degree to which MCAT scores contribute unique and useful information to the admissions process. In theory, MCAT scores and undergraduate grades are complementary pieces of information. The shortcomings of one measure are the strengths of the other. The MCAT assesses students on a standard content of knowledge and skills and reports scores on a standard scale, but is limited to sampling performance on a single day in a somewhat artificial setting. GPA is not standardized in either way, but is based on repeated assessments of a student's performance over a period of time. The multiple correlation values provide empirical support for this complementary relationship. Those based on a combination of MCAT scores <u>and</u> undergraduate GPA are consistently higher than those based on either predictor group separately. The increase in the average multiple correlation when MCAT is added to GPA, is 11 to 14 points when course grades are the criteria and 29 points when NBME scores are the criteria. These comparisons are usually expressed in terms of the "proportion of variance explained." that is, the multiple correlation values squared. In these terms, MCAT scores improve predictability by as much as 90 percent with course grades as the criteria and nearly 300 percent with NBME scores. Moreover, the contribution of MCAT to predictability generalized across samples. In all cases, the increase in the multiple correlation value when MCAT was added to GPA was statistically significant.

The third question, how individual MCAT scores relate to overall performance in the basic sciences, is addressed by the correlation values, observed and "corrected" for range restriction, shown in Table 3. Higher average correlations with year 1 grades were found for the MCAT science areas of assessment than for the skills analysis subtests. Chemistry has the highest average correlation, with Biology and Science Problems only slightly less. In over two-thirds of the samples studied, either Chemistry or Biology was the best predictor among MCAT scores (Table 4). Physics was the one exception to the predominantly higher correlations found for the science areas of assessment. Its average correlation with year 1 grades was lower than the other science assessment areas and it correlated best among MCAT scores with year 1 grades in only 1 of 34 samples (3%).

A different pattern of results is shown with year 2 grades as the criterion. Correlations between MCAT scores and year 2 grades are all systematically lower, except for SA:Reading. As a result, the average correlation for SA:Reading with year 2 grades is on the same level as the correlations for Biology, Chemistry, and Science Problems. Moreover, in 25 percent of the samples studied, SA:Reading was the best MCAT predictor of year 2 grades, only slightly less than the percentage for Chemistry.

These findings appear to reflect the persistent nature of the skills differences shown in the SA:Reading scores. Differences in science knowledge that students exhibit on the MCAT are reduced by the time they complete the first year of the basic science curriculum. These differences are then less useful for predicting the relative performance of students in the second year. The medical school curriculum presumably has a less direct impact in reducing differences in the more basic skils measured by the SA:Reading subtest. Therefore, while the science subtests are better predictors of how students perform initially in medical school, the SA:Reading subtest may be one that is more enduring.

The science subtests show the highest correlation with performance on NBME-Part I. In half of the samples studied, Chemistry was the best MCAT predictor. In the remaining samples, usually either Science Problems or Biology was the best MCAT predictor.

Data in Table 5 address the fourth question of how MCAT scores relate to specific areas of the curriculum. First, the data reinforce a point made earlier. MCAT correlations within each basic science area are consistently higher when performance is measured by subtests of NBME-Part I. This occurs despite the fact that anatomy, physiology, and biochemistry courses are taken typically in the first year, a full year prior to sitting for Part I of the National Board exams. Undergraduate GPA tends to be more highly correlated in each area with local course grades.

MCAT science scores show particularly strong correlations with performance in two areas of the curriculum: physiology and biochemistry. In fact, the one exception to the generally lower correlations for MCAT Physics is in terms of performance in physiology. The pattern of correlations between MCAT scores and performance in specific areas tends to be consistent with content similarities. MCAT Biology has the highest correlations with course grade performance in anatomy and microbiology. MCAT Chemistry has the highest correlations with performance in biochemistry and pharmacology. In addition to MCAT Chemistry and Science Problems, MCAT Biology, Physics, and SA:Quantitative each show high correlations with performance in physiology. Finally, SA:Reading is the best predictor of performance in behavioral science courses and the behavioral science subtest of NBME-Part I.

These comparisons of correlation values have shown the relative predictive validity of the MCAT subtests in relation to several different performance criteria. Of further interest is the magnitude of these correlations and what that implies about the strength of predictive validity. Any predictive measure with a validity coefficient greater than zero provides some advantage over a random process in selecting students who will perform well. But is the size of these correlations what one would hope for in a measure of this kind?

This question can only be addressed after noting several factors in these studies which artificially constrain the size of the validity coefficients obtained. These include 1) effects due to selection which render the enrolled student samples unrepresentative of the corresponding applicant pools in terms of range of ability; 2) effects of limited variance on the criterion measure; and 3) effects of low reliability of the criterion measure. We have partially dealt with the first factor, referred to as the restriction of range problem, by "correcting" the individual validity coefficients. However, recent research (3) indicates that even these upward adjustments are probably too conservative. They do not provide a substitute for the ideal experiment of studying students randomly selected from the applicant pool. Golmon and Berry (4) in their study of Northwestern students have come closest to this and have shown the dramatic differences that result.

The second factor, the effects of limited variance on the criterion measure, has also been partially dealt with by performing correlational analyses only for those criterion measures with a minimally adequate distribution of student performance. However, Sedlacek and Hutchins (5) demonstrated that even rather small differences between samples with regard to criterion variance are reflected in the size of the validity coefficients obtained.

The third factor, the potential low reliability of certain criterion measures, is based on the psychometric tenet that validity cannot exceed reliability. This applies particularly to course grades or local examination scores, whose reliability is generally unknown. While many of the criteria used in these studies may have high reliability, the presence of even some with low reliability would serve to lower the average of the coefficients obtained.

With these considerations in mind, we can describe certain levels of strength in the predictive validity of MCAT scores. Multiple and individual correlations with National Board scores reflect extremely strong predictive validity. These indices rarely exceed the values shown for measures of this kind. Correlations with first year grades demonstrate fairly strong predictive validity particularly with regard to performance in physiology and biochemistry courses. The incremental predictive validity described earlier, of MCAT scores combined with GPA,is the primary consideration here. The MCAT/GPA combination achieves a level of predictive validity with medical school course grades only slightly less than with NBME-Part I scores. Correlations between individual MCAT subtests and second year grades reflect only moderate to weak predictive validity. However, the predictive validity of the MCAT score composite tends to be in the moderate to fairly strong range.

MCAT validity results tend to be comparable to those found for the other graduate and professional school admission test programs. For example, average observed validity coefficients for the Law School Admission Test (LSAT), with first year law school grades as the criterion, tend to be in the .3 to .4 range (6). Correlations between scores on the Graduate Record Examination (GRE) Aptitude Tests and graduate school grades vary by area of study but average approximately .3. Those for the GRE Advanced Tests tend to be higher, but are still only in the .3 to .4 range (6). Results for the Graduate Management Admissions Test (GMAT) are similar, with median validity coefficients approximately .3 (7). Each of these tests is validated under similar constraints as the MCAT, and the results need to be viewed accordingly.

Conclusion

The MCAT Interpretive Studies program is a major effort by the AAMC to conduct research on the test used in medical school admissions. The results of validity studies conducted through the program thus far tend to support the MCAT's value as a predictive measure in the medical school admission process, and its continued use to the degree that the criterion performance measures that have been studied are deemed important. A systematic examination of research results has revealed some obvious trends. We expect that the identification of these trends will give perspective to validity research being conducted now and in the future. The exceptions to these trends are no less important. As more data accumulate, we plan to study how these exceptions relate to specific characteristics of the school, curriculum, and the nature of performance measures. More data will also allow further study into the methodological factors previously described that hamper accurate validity assessments.

Two further directions for MCAT validity research are in progress. The first relates MCAT scores to absolute measures of success/failure in medical school and measures indicative of academic problems. These include withdrawal/dismissal from medical school for academic reasons, delayed graduation due to repeating courses or deceleration of the academic program, and/or failure to pass Part I of the National Board exams. These data should prove useful to those interested in establishing a threshold at which applicants may equally be expected to satisfy the academic demands of the medical school curriculum.

The second direction for research is to examine the nature and extent of relationships between MCAT scores and measures of performance in the third and fourth year of medical school. These are given the general label of clinical performance measures, although they represent several distinct types. Clinical knowledge measures include scores on NBME-Part II, NBME shelf exams, or other in-house exams, used in the computation of clerkship grades. These measures might reasonably be expected to correlate both with basic science knowledge measures and the MCAT. Clinical skills measures are themselves of two kinds: 1) those that imply a cognitive skill, for example, appropriate emphasis on pertinent facts in history-taking, or the ability to integate clinical information from various sources to identify a problem, and 2) those that are primarily non-cognitive in nature, for example, sensitivity to patient's overall medical and personal problems, effectiveness in securing cooperation of patient and family, etc. Those MCAT subtests which assess skills in gathering, analyzing, and evaluating information may be expected to correlate with the former type of clinical skill measure but not the latter. However, knowing the full implications of using MCAT scores in admissions demands that relationships among all these measures be examined. This is also true with regard to the career choices made by medical students during this period. The AAMC's MCAT Interpretive Studies Program has as its goal to describe this multi-faceted picture of the implications of test use.

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Table 1

Distributions of Multiple Correlations for
GPA, MCAT, and GPA/MCAT Composites
With Year 1 and Year 2 Grades and NBME-Part I*

Predictor Composite		Year 1 Grades	Year 2 Grades	NBME-Part I
GPA†	3rd Q:	.46	.42	.37
	median:	.41	.37	.30
	1st Q:	.34	.27	.23
MCAT	3rd Q:	.49	.44	.63
	median:	.41	.37	.54
	1st Q:	.34	.29	.43
GPA/MCAT	3rd Q:	.58	.56	.68
	median:	.52	.51	.59
	1st Q:	.47	.40	.48

*Year 1 grades are based on 25 samples (classes) at 12 schools; Year 2 grades, 22 samples at 12 schools, and NBME-Part I, 18 samples at 9 schools.

†science GPA and non-science GPA

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†science GPA and non-science GPA

Table 2

Number and Percentage of Samples (Classes)
For Which GPA, MCAT, and GPA/MCAT Composites
Were Better Predictors of Year 1 and Year 2 Grades and NBME-Part I

Predictor Composite	Year 1 Grades		Year 2 Grades		NBME-Part I	
	N	%	N	%	N	%
GPA better than MCAT	13	52	10	45	0	0
MCAT better than GPA	12	48	12	55	18	100
GPA/MCAT better than GPA alone	25	100	22	100	18	100

Table 3

Median Individual Correlations,
Observed and Corrected for Range Restriction,
for Undergraduate GPA and MCAT Scores
With Year 1 and Year 2 Grades and NBME-Part I*

	Year 1 Grades Median Correlation		Year 2 Grades Median Correlation		NBME-Part I Median Correlation	
Undergraduate GPA	Observed	Corrected	Observed	Corrected	Observed	Corrected
Science	.36	.54	.35	.47	.29	.43
Non-science	.21	.26	.22	.26	.14	.17
Total	.37	.50	.34	.45	.25	.35
MCAT						
Biology	.34	.38	.23	.29	.40	.50
Chemistry	.31	.42	.23	.28	.43	.56
Physics	.26	.29	.14	.16	.34	.37
Science Problems	.31	.39	.22	.27	.43	.50
SA:Reading	.19	.26	.21	.28	.24	.32
SA:Quantitative	.24	.27	.16	.21	.29	.38

*Year 1 grades are based on 34 samples at 18 schools; year 2 grades, 28 samples at 16 schools; and NBME-Part I, 26 samples at 14 schools. Larger numbers than in Table 1 reflects the availability of data from published studies.

Table 4

Number and Percentage of Samples (Classes)
For Which Individual GPA and MCAT Scores Were Best Single Predictors
of Year 1 and Year 2 Grades and NBME-Part I

	Year 1 Grades		Year 2 Grades		NBME-Part I	
Undergraduate GPA	N	%	N	%	N	%
Science	28	82	18	64	21	80
Non-science	0	0	0	0	0	0
Total	6	18	10	36	5	20
	34	100	28	100	26	100
MCAT						
Biology	11	32	6	21	5	19
Chemistry	12	35	8	29	13	50
Physics	1	3	1	4	0	0
Science Problems	5	15	2	7	7	27
SA:Reading	3	9	7	25	1	4
SA:Quantitative	2	6	4	14	0	0
	34	100	28	100	26	100

Table 5

Median Individual Correlations Corrected for Range Restriction for Undergraduate GPA and MCAT Scores with Grades and NBME Scores in Specific Disciplines*

	Anatomy		Physiology		Biochemistry		Pathology		Microbiology		Pharmacology		Behavioral Science	
	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME	Gr.	NBME
Science	.40	.35	.47	.38	.44	.36	.42	.36	.43	.34	.40	.40	.31	.15
Non-science	.21	.10	.24	.08	.25	.08	.23	.20	.24	.10	.22	.18	.26	.16
Total	.39	.29	.42	.29	.39	.29	.41	.35	.39	.27	.40	.29	.34	.18
MCAT														
Biology	.27	.40	.35	.47	.31	.39	.24	.35	.29	.38	.19	.30	.21	.38
Chemistry	.21	.43	.45	.61	.41	.54	.25	.37	.23	.40	.28	.44	.19	.37
Physics	.17	.26	.37	.48	.23	.32	.10	.16	.08	.23	.17	.25	.12	.34
Science Problems	.21	.40	.45	.59	.36	.46	.21	.35	.25	.38	.23	.39	.21	.39
SA:Reading	.11	.17	.22	.27	.14	.16	.21	.25	.21	.26	.23	.19	.34	.51
SA:Quantitative	.14	.26	.33	.42	.23	.27	.12	.18	.19	.21	.15	.22	.21	.44

SOUNDING BOARD

THE MEDICAL COLLEGE ADMISSION TEST AND THE SELECTION OF MEDICAL STUDENTS

Editor's note: The following commentary was invited as a response to the unsolicited essays by Anderson and by Powers, which appear in this issue under "Occasional Notes." None of the authors read the other statements before preparing his article, but readers will see that they address the same questions: Does the MCAT in fact serve a useful purpose, and are its design and content appropriate for the uses to which it is put?

DURING the past two and a half years, the Association of American Medical Colleges (AAMC) has been engaged in a comprehensive study of undergraduate medical education called the General Professional Education of the Physician and College Preparation for Medicine Project. As the title indicates, part of the project has involved an analysis of the medical-school admissions process and its relation to events both before and after the period of application. It is not possible for those concerned about medical education to consider such issues without giving explicit attention to the Medical College Admission Test (MCAT) and its role in the entire process. A real risk in such considerations is that the benefits of established components of the existing system may tend to be taken for granted or lost sight of in the search for causes of perceived problems. It seems timely for these reasons — and given the fact that all but one school (the University of Rochester) require applicants to take the MCAT — to review existing factual information about the MCAT and its use. What follows is organized around the major questions voiced about the MCAT.

PREDICTION AND THE MCAT

The most common expectation associated with the MCAT is that it be a predictor of performance. This suggests that the MCAT must predict effectively and provide information that is not otherwise available. Wider agreement about more specific purposes of the test, however, is harder to achieve.

Some would like the MCAT to predict the quality of care provided by the physician in practice. Considering the lack of consensus about how to measure the quality of patient care, the factors affecting care that are not under the control of the physician, and the long interval of time such a prediction would have to cover, this is an unrealistic expectation. Some of these same factors make it equally difficult to assess the effect of a physician's medical education on the quality of care.

Others would argue that a sufficiently important objective for any piece of admissions information, MCAT scores included, is to predict successful performance in medical school, particularly in the early years, during which attrition is greatest. Performance in medical school is measured in a variety of ways, and it is important when weighing the predictive validity of the MCAT for a specific application to keep in mind all the circumstances specific to an institution.[1] However, national data based on criteria that are commonly of interest to admissions committees are valuable and suggest the most reasonable use of test scores in a specific setting.

Evidence is available from studies prepared by individual schools and published independently of the MCAT program (bibliography available from the AAMC Division of Educational Measurement and Research). Other information organized by the AAMC is available from the MCAT Interpretive Studies Program, an effort involving 30 medical schools that is designed to yield predictive-validity data of general programmatic interest and of specific relevance to the participating schools. Data from the Interpretive Studies Program have been presented at regional meetings of admissions officers over the past three years. A paper summarizing the data that are currently available is in press and will appear in the *Journal of Medical Education.*[2]

The two most important predictors of medical-school performance are the grades earned in college (the grade-point average) and MCAT scores. It is sometimes argued that the grade-point average is as good a predictor of later performance as the MCAT, if not a better one, and that the MCAT is therefore unnecessary. In the following brief review of validation data, a comparison of the relative effectiveness of MCAT scores and grade-point average is presented for identical criteria.

When grades for medical-school year 1 are used as the criterion, the composite of MCAT scores and the composite of all college grades (overall grade-point average) are essentially identical in predictive value for 25 classes at 12 schools. Median correlations are $r = 0.41$ for each. The same pattern of results obtains when grades for medical-school year 2 are the criterion (for 22 classes at 12 schools). Median correlations are $r = 0.37$ for each predictor. When the student's performance on Part I of the National Board of Medical Examiners test is a criterion, the picture is decidedly different. The MCAT is a dramatically better predictor than the overall grade-point average by a factor of almost 300 per cent, with a median correlation of $r = 0.54$. The corresponding correlation for grade-point average is $r = 0.30$.

Finally, for all criteria, the combination of MCAT and grade-point-average composites are better predictors than either individually. The median combined correlations with year 1 grades are raised to $r = 0.52$; with year 2 grades, to $r = 0.51$; and with National Board of Medical Examiners test Part I, to 0.59. In this context, it should be noted that the addition of MCAT scores to undergraduate grade-point average improves the predictability of medical-school grades by 90 per cent. The preceding correlations are actually underestimates of the true correlations, since the variation of the group for which criterion information is available has been markedly reduced both for predictors and for criterion measures by selection effects.

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An additional prediction involves the use of the MCAT to evaluate the likelihood of failure for candidates with given scores. Since relatively few are admitted with scores at the lower end of the scale, and since those few tend to receive special academic support, a full evaluation of this use of the MCAT is problematic. However, it is possible, for example, to identify the proportion receiving scores of 6 or 7 in biology who must delay graduation for academic reasons (11.3 and 6.4 per cent, respectively) and who withdraw or are dismissed for academic reasons (5.8 and 2.2 per cent, respectively). Data of the same kind are available for all score levels in each subtest and for subgroups of special interest. This additional information allows schools to evaluate the levels of risk involved in admitting students with different qualifications. Thus, a school can use local experience with the MCAT to identify the score levels above which no important decrease in the likelihood of academic difficulty will occur.

These data for various groups leave little doubt that MCAT scores have a consistent advantage over undergraduate grade-point average in effectiveness of prediction. However, it is important to remember that admission involves a specific person at a specific school. Thus, the preceding relations need to be confirmed at the local level, with local criteria. It is also true that test scores sample performance on a single occasion, when it is subject to all the unknown factors inhibiting performance at that time. However, it is also the only directly comparable measure of performance for all applicants that uses a common scale of measurement, is based on evaluation of the same content, and is evaluated according to the same standards or norms.

MCAT scores and the grade-point average are most appropriately used in conjunction with each other. College grades take on more or less importance depending on how well known the college is, how rigorous the program followed by the applicant was, how consistent the academic and test profiles are, how much time has elapsed since the course work was done, and whether excellence of achievement in any relevant area is evident from the transcript. Since applicants come from more than 800 colleges with various degrees of selectivity, these become important issues. Data are available that show systematic differences of about 2.5 points on the MCAT scores for the same grade-point average earned at undergraduate colleges with high as opposed to low selectivity in their admissions practices.[3]

Admissions decisions reflect balance among the kinds of information available from the MCAT, undergraduate transcripts, and other sources (the interview, letters). The actuarial data published annually by the AAMC in its *Medical School Admissions Requirements* handbook show that fully 17 per cent of the applicants with MCAT science scores in the range of 12 to 15 are not offered an acceptance.[+] Similarly, as many as 11 per cent of the applicants with grade-point averages of 4.0, and 35 per cent in the range between 3.3 and 3.9 are not admitted. In fact, 11 per cent who have scores between 12 and 15 and grade averages of 3.3 and above fail to receive an acceptance, suggesting the importance of factors other than MCAT and grade-point average.

College Education and the MCAT

In the design of the current MCAT, particular attention and concern were given to the potential impact of MCAT preparation on college and university education. The guideline adopted was intended to give students as much freedom as possible to pursue individual interests. As a matter of principle, the content of the MCAT was therefore rigidly restricted to material covered in the minimal course requirements mandated by almost all U.S. medical schools. In addition, the depth of the content was limited to that of introductory courses only, as offered at most institutions across the country. Another major constraint restricted the subject matter to areas deemed, in the collective judgment of over 150 medical faculty members, most relevant to success in the study of medicine. Remarkable consensus was achieved the first time these judgments were sought in 1976, and a seven-year follow-up has confirmed their continuing applicability.

An explicit decision was made not to include humanities or social sciences in the MCAT, because such an action would be tantamount to adding those subject areas to the list of requirements. Though some have argued that such an effect is desirable, the consensus was that personal freedom of choice should be maintained. The new MCAT made it possible at the same time to demonstrate science achievement in each of the three required sciences (biology, chemistry, and physics) according to published detailed test specifications. This is in contrast to the science subtest of the old MCAT, an earlier, more general and ambiguous measure of science proficiency that contained questions drawn from vaguely described topics in all three disciplines. The opportunity to use MCAT information in a diagnostic manner is thereby provided.

The new examination also replaced the verbal section of the old MCAT, which was a classic test of synonyms, antonyms, and verbal analogies, with a test of various types of thinking and reasoning that do not depend on specific prior study and that have been found to be important in the study and practice of medicine — the new "MCAT–Skills Analysis: Reading" test. The quantitative section of the old MCAT — a typical test of computational, algebraic, and geometrical functioning — was replaced by a test of cognitive skills that are comparable to those in the "Skills Analysis: Reading" test but involve the application of quantitative information (graphs, charts, tables) to the solution of problems. The new test is called the "MCAT–Skills Analysis: Quantitative" test. Performance on these subtests has been found to be a rare indicator of performance in medical-school course work in the behavioral sciences.

The subtests also differ in the sensitivity of their scores to attendance by the student at commercial review courses.

Coaching Courses and the MCAT

This is an issue about which it is particularly difficult to separate beliefs based on emotion from conclusions based on data. A central issue is the assumption that increases in test scores that are associated with participation in coaching courses are spurious and suggest that the test is invalid. This assumption is often based on the belief that such increases are due to an acquired facility, called "test-taking skill," which is presumed to be undesirable. The assumption is also based on the belief that any improvement in score depends on exposure of the student in the coaching courses to questions that have previously been used in the test. Some of these assumptions derive from the misconception that the MCAT is an aptitude test that measures competencies inherent in the individual (that is, inborn characteristics) and that really do not change. In fact, the MCAT is an achievement test, particularly in its science sections, that measures knowledge and skills that are subject to change through learning over a relatively short period of time. In the reading-skills-analysis and quantitative-skills-analysis subtests, the MCAT primarily measures skills that are developed over a much longer time and that are thus less subject to change because of short-term learning.

Students who have taken the MCAT for the first time in the spring, enrolled in a coaching course during the summer, and repeated the MCAT in the fall have been studied over a five-year period. Changes in their scores have been analyzed and compared with those of a comparable group of students who did not take a review course during the summer. Gains in performance in the two groups have been compared in order to study effects that are associated with participation in a coaching course.

The results do not support the stated concerns about validity but are very consistent with the design of the test. In general, greater gains, of about half a point, in the three science subtests are associated with coaching courses. The increment in the quantitative-skills subtest is on the order of two 10ths of a point, and no larger increment for the review-course group is observed in the reading-skills test. These data are consistent with the predictable effect of a meaningful period of structured, concentrated study in the specific science topics covered on the MCAT. The trend toward a decreasing average gain as the knowledge requirements of the subtests are reduced suggests that the primary advantage of a review course is that it may help the student acquire the knowledge required by the science subtests and, to a lesser extent, by the quantitative-skills-analysis subtest.

The systematic finding that there is no advantage for review-course participants in the reading-skills-analysis subtest does not support either of the two previously stated assumptions about review courses. If highly similar or identical versions of previously used MCAT questions are used in coaching courses and subsequently appear on the second taking of the examination, there is no reason to expect such a phenomenon to be most prevalent in the science subtests, next most prevalent in the quantitative-skills subtest, and absent in the reading-skills subtest. Exactly the opposite trend would have been expected on the basis of experience indicating that answers to the skills type of questions are most easily remembered. This lack of gain in the reading-skills subtest also disposes of the notion that coaching courses primarily give students a new facility in test-taking techniques. The literature suggests that such a new "skill" would show up especially in subtests involving the longer, more complicated questions that predominate in the skills subtests. Thus, the exactly opposite pattern of differential gains would be expected.

In summary, to the extent that coaching offers a structured, concentrated course of study (often 12 weeks or more of guided instruction), it is reasonable to expect that some real learning will take place. In fact, the test would be invalid if it were not sensitive to such gains in science proficiency. The remaining question is whether such a review disturbs the predictive value of the test. That is, does the gain from coaching lead to the acceptance of students who have "higher scores than they should"? If so, the incidence of delayed progress or academic failure would be systematically higher for the coaching-course participants. Data that were examined explicitly for such a pattern showed no differences of this kind.

The existence of commercial coaching courses that exploit the anxieties of potential applicants and contribute to the perceived inflated importance of test scores is clearly a social ill and requires social, not psychometric, changes. The AAMC continues to be active in seeking acceptable alternatives and in monitoring such enterprises for the introduction of distortions into test results. Such a distortion occurred in Philadelphia last summer, when a breach of test security was observed in connection with the operation of Multiprep, Inc. Legal action was taken to end practices that were compromising the integrity of the test scores, and the examinees involved were retested at the expense of the AAMC. Initiatives against the undesirable social and measurement consequences of coaching courses will continue.

Space has permitted only the provision of essential background information and the addressing of some issues related to the overall value of the MCAT program. The AAMC staff continues to expand educational activities designed to improve the appropriate use of test scores.

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The University Research Capacity Restoration Act of 1984

The Issue

Concerns about the deteriorating capacity of universities to continue their high level of research effort and productivity because of insufficient resources have prompted Senators Danforth and Eagleton to explore devices whereby federal agencies that support scientific endeavors could significantly increase their funding for the basic sciences and related support elements in university environments.

Background

The conventional Congressional process to channel additional resources into a program is to urge the cognate appropriation committee to increase commitments to that program; if authorization ceilings become limiting; the cognate authorizing committee is importuned to expand their ceilings.

In 1983 the two Senators chose to introduce the University Research Capacity Restoration Act of 1983 (S. 1537). A broadly inclusive legislative proposal with an extraordinarily eloquent "findings and purpose" (attached), it spoke to research funding from the National Institutes of Health, the National Aeronautical Space Administration, the National Science Foundation and the Departments of Energy, Agriculture and Defense. Procedurally, S. 1537 was and is somewhat irregular, with provisions that suggest usurpation of the jurisdiction of multiple authorizing Committees and appropriations subcommittees. Proponents argue that its passage, as an expression of the view of the Congress, would stimulate these concerned committees to take appropriate action. However, it was not, for reasons unknown to the AAMC, cast in the form of a Joint Resolution, the conventional device for expressing the will of the Congress. Because of the timing of the introduction of the bill and other complications, it received relatively little attention in 1983, and there was no companion legislation introduced in the House. For reasons similar to those described below, the AAMC did not support the bill, although it also took no formal stand in opposition to it.

The proposal has now been updated for probable introduction in the House and reconsideration in the Senate. It is intended to facilitate modification in the authorizing legislation of the several agencies. The section related to the National Institutes of Health has been changed so as to recognize the fundamental importance of Section 301 of the Public Health Service Act, the broad and basic authority for support of research in the Public Health Service Act. However, because of apparent technical difficulties in drafting, the bill contains several of the same features which the AAMC staff found objectionable in the earlier version. Those are:

- The use of an authorizing vehicle to attempt to achieve enhanced funding for biomedical and behavioral research. The problem for the Association lies in our vigorous and persistent opposition to any legislation, such as previously been introduced in the House, that would place time or dollar limitations on funding for NIH. Thus, even though the inclusion of the phrase, "...such additional amounts as may be necessary ...," technically modifies the ceiling nature of the $5,213,900,000 previously mentioned in the bill, the Association would clearly be supporting an authorization in one piece of legislation while opposing it on grounds of principle in others.
- The proposal speaks to "FY1985 ... and each of the four succeeding years...," thus introducing at least the concept of a time-limited authority.
- The proposal speaks to "full direct and indirect costs of not less than 5,400 new and competing investigator-initiated research grants..." It seems highly undesirable to introduce such detail in any legislative proposal.

Recommendation

It is recommended that the Executive Council espouse the objectives stated in the "findings and purpose" to the proposal but not support this bill because of the inherent dangers described above.

SUMMARY OF THE UNIVERSITY RESEARCH CAPACITY RESTORATION ACT OF 1983

INTRODUCTION

The purpose of this legislation is to restore and strengthen the capacity of fundamental science research and advanced education programs at the Nation's universities. The bill is a blueprint for this restoration effort; it sets an agenda for a five-year program of increased federal support for university basic science and engineering research and advanced education programs.

The bill has been drafted with the assistance of the Association of American Universities, and it addresses the basic research needs of universities involved in the programs of six federal agencies and departments: NIH, NASA, NSF, and the Departments of Energy, Agriculture, and Defense.

The bill gives these agencies and departments authority (where necessary) and increased funding to implement six objectives:

1. to augment and strengthen federal support for fundamental research programs in basic science and engineering at our nation's universities;

2. to upgrade, modernize, and replace the instrumentation and equipment of university research facilities and laboratories;

3. to provide increased numbers of graduate fellowship awards to individuals and university science departments engaged in federally supported research;

4. to support expanded faculty development programs that promote the initiation of research careers by young university faculty;

5. to support efforts, on a matching basis with the institution involved, to rehabilitate, replace, or otherwise improve the quality of existing university research facilities and laboratories in which federally supported basic science and engineering research is carried out;

6. to modernize and improve undergraduate science and engineering instructional programs and curricula to meet the Nation's changing needs.

The first title of the bill outlines the underlying policy and purpose of this legislation. Each of the other titles is concerned with one of the agencies or departments involved. The intent is to offer the provisions of each of these agency and department titles as amendments to the appropriate authorization or appropriation bills.

A discussion of each of the agency and department titles of the bill follows.

TITLE II--DEPARTMENT OF AGRICULTURE

This title would authorize the appropriation of the following additional funds for basic research in fiscal 1984 and each of the succeeding four years.

- First, this title calls for an additional $15 million above the current level of funding for the Department's Competitive Research Grant Program; these funds go to basic research work by State agricultural experimentation stations, all colleges and universities, and other research institutions for research to further the programs of the Department.

- This title also provides $35 million per year for an instrumentation program to provide for the acquisition and installation of research instrumentation by land grant colleges and universities with the demonstrated capacity to conduct excellent fundamental research of interest to the Department.

- It makes available $35 million per year, on a matching basis, to land grant colleges and universities for a program to modernize, rehabilitate, replace, or otherwise improve the quality of existing laboratories and facilities engaged in Department of Agriculture research.

- It provides $5 million for faculty development awards in fiscal 1984, $10 million in fiscal 1985, and $15 million in each of the following three years. These funds are to be used for career initiation awards to young faculty engaged in food and agriculture research.

- Finally, it provides $10 million in fiscal 1984 for an expanded graduate fellowship program; $20 million in fiscal 1985, and $30 million in each of the following three fiscal years. Each year, this funding is to be divided with half to go to individual grant recipients and half to go to the departments of institutions engaged in Department research.

TITLE VI--NATIONAL INSTITUTES OF HEALTH

This title authorizes annual increases in funding of over $570 million and such additional sums as may be necessary to restore the capacity of NIH to conduct and support biomedical research in fiscal year 1984, and each of the succeeding four years. The bill provides that the annual increase is to be used for the following purposes:

- To support basic research by (1) providing the full direct and indirect costs of not less than 5,400 new and competing, investigator-initiated research grants; (2) by restoring the NIH study sections recommended levels for noncompeting grants; (3) by providing additional grants for research centers; and (4) by providing additional funds for biomedical research support grants;

- To provide additional amounts for the agency's instrumentation program to be used to provide instrumentation in support of NIH biomedical research;

- To support laboratory rehabilitation by making funds available, on a matching basis, for a program of modernization and rehabilitation of existing laboratories and facilities engaged in biomedical research supported or conducted by NIH;

- To provide career development awards for young faculty engaged in fields related to NIH research;

- To provide additional individual and institutional NIH National Research Service awards.

ADVANCEMENT OF WOMEN IN ACADEMIC MEDICINE

The Association has been approached by the American Council on Education's Office of Women in Higher Education about co-sponsoring one of ACE's periodic National Identification Programs for the Advancement of Women in Higher Education Administration. Under this program, periodic forums are arranged to which twenty women and ten men academic administrators are invited. The women are usually in senior but not top administrative positions, and are presumably ready to be tapped for institutional leadership positions. The men are already institutional leaders and presumably individuals who may be asked for recommendations when leadership positions are vacant.

The format of the day and a half NIP workshops is fairly unstructured. There are three sessions broadly dedicated to the discussion of national issues, institutional issues, and personal development and advancement. During these discussions the men meet the women, learn about their talents and knowledge, and it is hoped, return to their institutions with a new list of women whom they might recommend when queried by search committees.

ACE has conducted more than 20 of these national identification programs. Of the nearly 600 women who have participated, 31 have become institutional presidents and 150 have taken new jobs in senior level positions in educational institutions.

The proposed joint ACE-AAMC program would be directed solely to advancement in academic medical centers rather than to higher education in general. The cost to the Association would be under $1,000 if we supported only certain administrative costs or as much as $10,000 if travel costs of some participants were covered.

In discussing the proposed program among staff, with Dr. Stemmler, and with some senior level women, the following concerns were raised:

--Is this the best method for fostering the advancement of women in academic medicine administration?

--Would our constituents be likely to participate or is this effort too self-conscious?

--While this mechanism seems to have worked for colleges and universities, would it work in academic medicine where the community is much smaller and already has channels of communication?

--Is the limiting factor in the overall advancement of women the need to make individual women more widely known or is it that there are too few women available?

Everyone involved in the discussions felt it was appropriate for the Association to support the advancement of women, and the main focus of the discussion became identifying the most effective ways of achieving those goals. Currently the Association's major efforts in this area have been:

--Executive Development Seminars for Women in Academic Medicine: These are modeled on the regular MEP seminars. Four have been held with just over 100 women attending. No additional seminars are currently scheduled.

--Faculty Roster: This database is used to generate lists of qualified women for search committees. Despite some major shortcomings, since its inception in 1980 this program has responded to more than 700 requests.

In addition to holding the National Identification Program as a separate meeting, other possibilities for Association action were suggested:

--A modification of NIP using the COD Board as the male leaders rather than having an invitational conference.

--Holding the NIP forum in conjunction with the annual meeting.

--Compiling a roster of women in senior positions which could be used in making recommendations to institutions when asked for nominees or sent unsolicited to institutions with vacancies.

--Making a conscious effort to schedule more women speakers at AAMC and COD meetings.

--Seeking funds to support a visiting lectureship program for women faculty.

--Including questions about the status of women faculty in the institutional self-study conducted during the accreditation process.

The COD Board is asked to consider what might be appropriate action for the Association in this area, and, at a minimum, decide whether the AAMC should accept the ACE invitation to co-sponsor a National Identification Program forum.

DRAFT

COUNCIL OF DEANS - ISSUES IDENTIFICATION

Stimulated by the appearance of the paper, "New Challenges for the Council of Teaching Hospitals and Department of Teaching Hospitals," the Council of Deans' Administrative Board requested that the staff of the Department of Institutional Development prepare a document outlining the issues facing medical school deans and their implications for the Council of Deans as a constituent part of the AAMC, and for the AAMC itself.

What follows is an initial and very preliminary draft of such a document. It is derived in large measure from the discussion at the Council of Deans' Administrative Board Meeting held March 16, 1984.

Background

The past twenty years have been a period of remarkable growth for medical schools: a fifty percent increase in the number of institutions, a 100 percent increase in medical school enrollments, and a 300 percent growth in the number of full-time faculty. Financial support of U.S. medical schools (1960-61 through 1981-82) has grown over 500 percent, from $436 million to $2,351 million. The proportion from tuition and fees has remained constant at six percent, while state and local support has risen from 17 percent to 22 percent. The most dramatic shift has been a rise in the dependence on medical service income from six percent to over thirty percent. Federal research support has dropped from 31 to 22 percent of the medical school budgets, while other Federal support has dropped from 10 to 6 percent.

The Graduate Medical Education National Advisory Committee (GMENAC) predicted that there will be a significant surplus of physicians in the U.S. by 1990. By that year, the physician to population ratio is expected to exceed 220 per 100,000 and by the year 2000, reach 247 per 100,000. Levels in 1960 and 1978 were 141 and 171 per 100,000 respectively. While there is no universally agreed upon calculus by which need can be determined, it does appear that the large number of physicians being prepared is having an impact on the economics of medical practice and on both the geographic and specialty distribution of physicians.

Notwithstanding this dramatic growth of capacity of the U.S. for providing medical education for its citizens, ever larger numbers are enrolling in foreign schools. While we have no direct figures on foreign matriculants, several indirect measures give some assessment of the magnitude:

- the number of U.S. citizens who have graduated from foreign schools and seek certification to enter graduate medical education in the U.S. through NRMP rose from 860 in 1974 to 2,793 in 1982;
- In 1982, 1826 U.S. nationals enrolled in foreign medical schools sought advanced placement in U.S. schools (1,337 of these came from seven proprietary schools located in Mexico and the Carribean);
- It is estimated that more physicians licensed in Illinois in recent years have graduated from foreign schools than from U.S. schools;
- The 1980 GAO Report estimated a foreign school enrollment of between 8,000 and 11,000.

We have now entered a period of cost consciousness. Efforts are being made to restrain governmental outlays by regulations, encouragement of competition or straightforward budget cutbacks. Most notable, perhaps, is the effort to constrain the growth of Medicare expenditures through prospective pricing of hospital care for Medicare beneficiaries on the basis of statistically generated norms. This shift from retrospective cost reimbursement places new management imperatives on the hospitals and their medical staffs which, in turn, may place new constraints on the ability and/or motivation of the hospital to continue historic and traditional missions related to education, research, and provision of care to the indigent. The NIH budget does not appear as robust as in times past, and programs for institutional support of medical schools and financial assistance for medical students have disappeared or are markedly diminished.

The Issues

The issues facing deans and thus, the Council of Deans, in large measure, mirror these developments; the size, cost, and quality of the enterprise are uppermost on everyone's mind. In times of plentiful resources, objectives related to effectiveness predominate; in times of scarcity, efficiency objectives gain more prominence. Thus, efficiency now appears to have gained the upper hand, but efficiency in service of trivial objectives is of no service to society nor does it contribute to the traditional missions of academic medicine. Thus, the first questions to be asked should be mission oriented; the one mission which characterizes all medical schools and academic medicine centers is undergraduate medical education.

Undergraduate Medical Education

The quality of undergraduate medical education is the subject of an entire day's discussion at the Spring Meeting; its enhancement is the objective of the GPEP project; its preservation is the principal object of the LCME (now considering revised set of minimum standards).

Chief among the criticisms of medical education is the charge of information overload and the lack of an organized attack on the problem:

- Are we devoting sufficient attention to limiting the burden of unproductive short-term, fact memorization?
- Are we preparing students for independent learning to handle the accelerating growth knowledge from biomedical research?
- Are we developing appropriate conceptual tools and problem solving skills?
- Are we fostering high ethical standards and humanistic values?
- Is the faculty devoting adequate time to its academic responsibilities, particularly with respect to undergraduate medical students?

Recruitment and Admissions

Some observers, focusing on the decline of the applicant pool, (from a peak of 42,624 in 1974-75 to 36,730 in 1982-83), anticipate a problem of recruitment to the medical profession. They cite a number of factors:

- perceptions of a loss of status of the profession;
- difficulty in financing an education;
- concern that a physician surplus will constrain practice opportunities and limit ability to pay off sizable debts;
- fear that physician numbers will require a competitive life style, highly entrepreneurial and marketing oriented;
- observation that specialty choice may be constrained.

Questions of sociologic and economic diversity of those entering the study of medicine persist. Many minority students have experienced both personal and financial difficulties in attempting this career and fewer students from under-represented backgrounds are considering the field viable.

Are we using appropriate criteria and asessment instruments for admission decisions?

Size

How do we best respond to perceptions that the academic medical enterprise is too large and costly?

- What are the implications of reducing class size?
- How can program reconfigurations strengthen rather than weaken institutions?
- Are faculties larger and more costly than necessary or appropriate?

Financing

What are the implications of contemporary medical school financing being so heavily dependent on income derived from professional medical services?

Are hospitals and clinical faculty members becoming too preoccupied with financial matters at the expense of academic considerations?

Are faculty practice plans organized and operated in a way which best serves the academic mission of the institution?

Organization

Is the medical center organized in a way which both permits appropriate differentiation of responsibilities for patient care, research and education and fosters adequate integration of these tasks to permit them to be accomplished effectively and efficiently?

Graduate Medical Education

Are there adequate positions available to provide appropriate graduate medical education opportunities for our graduates?

Is the process of specialty selection and GME placement sound?

Foreign Medical Graduates

Are there adequate screening mechanisms to prevent unqualified graduates of foreign medical schools from undermining the quality of medical care in this country? Of graduate medical education programs for which we are responsible?

Licensure

Does the impending replacement of the National Board of Medical Examiners Examination by FLEX I and II pose the threat of impermissible control of medical education by state licensing boards?

Quality of Care

With the current concentration on cost cutting strategies are we likely to see the adequacy of quality of medical care as a major future issue?

- Are we appropriately positioned to assess quality?
- What indicators should be developed and monitored?
- What resources should be devoted to such tasks? How directed?

Research

Aside from funding, ethical issues related to the conduct of research are among the most prominent. Are we appropriately positioned to deal with questions regarding:

- The probity of investigators?

- The treatment of human subjects of research?
- Of animal subjects?

With the prospect of increasing interconnections between industry and academic medicine, have we developed the appropriate culture, infrastructure or ethic to assure that the involvement assists rather than detracts from our ability to carry out fundamental missions?

Proprietary Hospitals

Fourteen member medical schools have affiliation (or closer) relationships with for-profit or investor owned hospitals. In at least one case (University of Louisville) such a hospital is the school's primary teaching hospital. Under current AAMC rules, these hospitals are ineligible for COTH membership. Should a mechanism be found for including such hospitals in the AAMC?

ROLE OF AAMC

With respect to each of the issues identified, the role of the AAMC needs to be assessed. Is there a role and what should it consist of? The COTH paper sets out the following framework for analysis:

"Associations of autonomous service and business entities, generally focus their activities on one or more of five goals.

Advocacy--the association works to advantage its members by obtaining favorable or avoiding unfavorable treatment from the environment in which it operates. Advocacy activties may be directed at the political process (legislative and executive) or at the private sector environment.

Economic--the association works to develop programs and member services designed to improve the efficiency and profitability of its members. Examples of such programs include group purchasing, standardized operating procedures, and multi-firm benefit and personnel programs.

Information--the association provides its members with a convenient and reliable network designed to furnish members with significant information on developments in the environment. To the extent that members are willing to share internal information with each other, the association provides a means of facilitating the exchange of "within member developments."

Education--the association develops educational programs specifically designed to meet the specialized needs of its members.

Research--the association develops an organized program to monitor the performance of its members, to develop methods or techniques which can be used by all members, and/or to identify early developments likely to affect the environment in which a member operates.

In most associations, each of these goals is present. Differences in associations seem to reflect differences in the emphasis given a particular goal and in the balance of activity across the five goals."

Governance of the AAMC and the COD

As a result of the Coggeshall Report, Planning for Medical Progress Through Education, completed in April of 1965, the AAMC was reorganized to formally involve teaching hospitals and academic societies in its governance. Thereupon, the old "deans club" was rapidly transformed into an organization with the specific objective of initiating continuous interaction between the leadership of all components of the modern medical center. While much was achieved as a result of this transformation, there have been costs as well. Perhaps chief among these has been that the deans' sense of personal involvement with their organization has been attenuated. The 50 percent increase in the number of schools greatly added to the difficulty of the deans personally, and the AAMC as an organization in maintaining effective communications. But numbers alone were not the problem; increasing diversity added to the complexity as well. New schools consciously adopted a non-traditional approach to teaching, faculty, and relationships to hospitals. New interest groups were formed, as deans and others sought colleagueship and help from others whose situation resembled their own. Though the AAMC retained its name, and recognized the primacy of its medical school constituency by preserving a plurality of deans as voting members of the Executive Council, the sheer number of those involved in policy making for the organization has inevitably led to a diminution of the intimacy previously felt.

The diversity of interests represented and the complexity of the issues required new integrating mechanisms, more bureaucratic procedures and sometimes intricate decision making processes. The multitude of enviromental factors impinging on medical education, biomedical research and patient care, together with the rapidity with which developments occur required a full-time professional staff not otherwise occupied by responsibilities for managing institutions. Staff played an increasingly prominent role not only in coordinating the processes, but in identifying issues, analyzing their implications and proposing responses as well. On urgent matters, such as legislative developments requiring rapid response, the process often directly engaged only the Council's officers, some of the most directly affected members and/or those with possible legislative influence. The membership at large sometimes was unaware of the deliberations until after the decisions had been made, or they were asked to respond only after directions had been well established and there appeared little possibility of exerting significant influence.

Several specific strategies have been designed to advance the objective of assuring that the Council of Deans serves as the deans professional society:

- The COD Spring Meeting with its mix of program, business and unscheduled time designed to facilitate maximum interchange among the deans.
- The establishment of the AAMC's Management Education Programs recently recast to emphasize the continuing education function of the program.
- The new deans "package" and orientation program.

Most recently the Board has considered approaches which would enhance this objective:

- A proposed new session at the annual meeting emphasizing dialogue and deliberation in contrast to routine business and reports.
- A new level of responsibility and accountability on the part of the Board members for communication with the membership as a whole.
- Acceptance of a greater level of responsibility on the part of Board members for the initiation of new Council members into the club.

Issues:

- Are the affairs of the Council of Deans conducted so as to realize the goal of the Council serving as the deans' professional organization?
  - Are approprite meeting sites chosen, issues identified, speakers selected, opportunities for effective dialogues offered?
  - Do appropriate mechanisms exist for involving the deans in AAMC issue selection and analysis? Policy setting deliberations?
  - Are the deans adequately informed of AAMC activties?
  - Are the deans adequately staffed and given support for their involvement in AAMC programs?
- With respect to the AAMC as a whole, is there a proper balance between its various programmatic activties?