association of american medical colleges

JOINT ADMINISTRATIVE BOARDS MEETING

"The Direction of National Science Policy"

Guest Speaker

Representative Don Fuqua
Chairman, Committee on Science and Technology
U.S. House of Representatives

Wednesday, June 19, 1985
6:00 p.m. in the Military Room
Washington Hilton Hotel

To be followed by Cocktails in the Map Room
and
Dinner in the Caucus Room

one dupont circle, n.w./washington, d.c. 20036

The House Committee on Science and Technology Policy has established a bipartisan Science Policy Task Force to conduct a two-year study of national science policy. The Task Force is the first major Congressional review of American science policy in nearly twenty years and will focus on the significant changes which have occurred in the science-government relationship and the overall environment for scientific research. Specifically, the Task Force is undertaking an indepth review and examination of government policies in 1) conducting and supporting basic and applied research, and 2) science and engineering education and manpower issues as they are related to graduate and postdoctoral education. An indepth ten-point agenda for the Science Policy Task Force was published in December 1984.

The eighteen member Task Force is under the leadership of the House Committee on Science and Technology Policy Chairman, Don Fuqua (D-FL) and Committee ranking minority member Manuel Lujan, Jr. (R-NM). A long term objective of the Task Force is to achieve a deeper understanding of science policy issues and to examine such issues outside of the conditions of crisis which so often force policy changes. To facilitate this long term objective a number of studies, evaluations of existing programs, and bibliographies have been requested from the Congressional Research Service, the Office of Technology Assessment, and the General Accounting Office. The Task Force has also scheduled an exhaustive series of hearings in 1985 and early 1986. Following the hearings Task Force staff will compile and write a draft of the final report, copies of which will be circulated to the scientific community for comment before the final report is published at the end of September 1986.

The Task Force will examine all of the sciences, including the life sciences. However, since the jurisdiction and background of the parent committee is focused on the physical sciences, space, energy, and environmental research and the National Science Foundation, they have had less contact with the biomedical milieu and policies relevant to the NIH and the medical school environment. Thus the Association, as well as other segments of the biomedical/biobehavioral research community, may have a useful role to play in identifying key policy issues as well as providing resources and data to the Task Force.

The AAMC will be forming an ad hoc Research Policy Committee under the chairmanship of Dr. Edward Brandt, Chancellor of the University of Maryland, to assist it in examining federal biomedical research policy in the context of the work of the Task Force on Science Policy.

Further background information on the Task Force is provided on the following pages:

MEMBERSHIP OF THE SCIENCE POLICY TASK FORCE

DEMOCRATS:

Don Fuqua (FL-2), chairman
George E. Brown (CA-36)
Doug Walgren (PA-18)
Stan Lundine (NY-34)
Norman Y. Mineta (CA-13)
Harry M. Reid (NV-1)
Richard Stallings (ID-2)
Frederick C. Boucher (VA-9)
Harold L. Volkmer (MO-9)
Timothy E. Wirth (CO-2)

REPUBLICANS:

Manuel Lujan Jr. (NM-1)
Claudine Schneider (RI-2)
Ron Packard (CA-43)
Tom Lewis (FL-12)
Robert S. Walker (PA-16)
Sherwood L. Boehlert (NY-25)
James Sensenbrenner (WI-9)
Sid Morrison (WA-4)

AGENDA FOR THE HOUSE SCIENCE POLICY TASK FORCE

I. The Goals and Objectives of National Science Policy

Purpose: To examine the goals and objectives of American science policy, the assumptions underlying these goals, and how well they are being achieved.

A. Goals of Federal Science Policy
B. History of American Science and U.S. Science Policy
C. The Future of U.S. Science
D. The Pay-off from Scientific Research
E. Accountability in Research

II. The Institutional Framework of National Science Policy

Purpose: To review the adequacy of research universities, industrial firms, and governmental agencies to meet the future needs and demands of science.

A. The Role of Research Universities
B. The Role of the Governmental Laboratories
C. Basic and Applied Research in Industry
D. Government Responsibility for the Research Infrastructure
E. International Cooperation in Big Science
F. Coordination and Management of Federal Research Programs
G. Role of the National Academies

III. Education and Manpower

Purpose: To examine the issues associated with and the relationships between scientific research, the education and training of scientists at the graduate and post-doctoral levels, and the demands for scientific manpower.

A. The Past, Present, and Future Government Role in Science Education
B. Effects of Long-Range Population Trends on Science Manpower Policy (Including Physicians)
C. The Government's Role in Professional Education (Including Physicians)
D. Equity of Opportunity
E. How Should the Education of Scientists, Doctors, and Engineers be Paid For?
F. Engineering Education
G. New Educational Technologies

IV. Impact of the Information Age on Science

Purpose: To examine the widespread introduction and use of modern information technologies such as telecommunications, electronically stored data bases, and computers on the conduct and scope of sicentific research.

V. Role of the Social and Behavioral Sciences

Purpose: To address the importance of the social sciences, particularly the question of future government support for research programs in these disciplines.

VI. The Regulatory Environment for Scientific Research

Purpose: To consider the relationship of societal values and scientific research, focusing on the conflict between the aims of society and the aims of research, the manner in which these conflicting aims are accomodated, and the development of principles to achieve balance.

VII. Funding Levels

Purpose: To explore the manner in which funds are allocated for scientific research, thus establishing national priorities, by both the government and by other providers.

A. History of Science Funding Since 1945
B. Is There an Optimum Level of Federal Support for Science?
C. The Financial Health of Universities and Medical Research Centers
D. Priorities for Science Funding

VIII. Support of Science by the Mission Agencies

Purpose: To examine the science programs, conducted both in government laboratories and through grants and contracts, of agencies such as the departments of Defense, Energy, and Agriculture, and the National Aeronautics and Space Administration.

IX. Funding Mechanisms

Purpose: To examine the array of funding mechanisms and instruments, such as peer review and grants, used to provide the government's research funds to organizations and individuals.

A. Alternative Systems of Funding Scientific Research
B. The Selection Process and the Role of Peer Experts
C. Styles of Research Support in Different Fields of Science
D. Secondary Effects of Present Funding Mechanisms
E. The Cost of Research

X. The Role of the Congress in Science Policy Making

Purpose: To review the processes of the Congress for dealing with the formation of science policy.

A. Science in the Political Process
B. Priority Setting by the Congress
C. Oversight and Evaluation of Federal Science Programs
D. Multi-Year Funding of Science Programs
E. Review of Science Policy Reports to the Congress
F. Background Materials for Members

PROPOSED SCHEDULE FOR THE HOUSE SCIENCE POLICY TASK FORCE

1985

February	Task Force Organizational Meeting Hearing on Goals of Federal Science Policy	(2/28)
March	Hearings on Goals of Federal Science Policy	(3/7, 21, 28)
April	Hearing on the Role of the Research Museum Hearings on Industry's View of Federal Research Policy Hearing on Big Science: High Energy Physics	(4/17) (4/23-24) (4/25)
May	Hearing on the Future of U.S. Science Hearing on the Nobel Prizes and Science Policy Hearing on Government and the Research Infrastructure	(5/2) (5/14) (5/21-22)
June	Hearings on International Cooperation in Science Hearings on Science in the Political Process	(6/18, 19, 20) (6/25/26)
July	Hearings on Science and Engineering Education and Manpower	(7/9, 10, 11) (7/23, 24, 25)
September	Hearings on the Impact on Science of the Information Age Hearings on the Role of the Social Sciences	(9/10, 11, 12) (9/17, 18, 19)
October	Hearings on Science in the Mission Agencies Hearings on Science in Goverment Laboratories Field Visits to Research Universities, Government Laboratories (tentative)	(10/2, 3, 4) (10/22, 23, 24)

1986

February	Hearings on Effects of Long Range Population Trends in Manpower Policy Hearings on the Regulatory Environment for Research
March	Hearings on the Pay-Off from Scientific Research
April	Hearings on Funding Mechanisms
May	Hearings on Funding Levels FIRST DRAFT OF FINAL REPORT DUE
June	Hearings on (combined) First Draft of Final Report Goals of Federal Research Policy The Role of the Congress in Science Policy Making
July	Hearing on the Role of the National Academy of Science TASK FORCE MEETINGS TO EDIT FINAL REPORT
August	STAFF REWRITE OF FINAL REPORT
September	TASK FORCE MEETINGS TO REVIEW AND EDIT FINAL REPORT FINAL REPORT TO GOVERNMENT PRINTING OFFICE: 19 SEPTEMBER PUBLICATION OF FINAL REPORT: 31 OCTOBER

LIST OF STUDIES COMMISSIONED BY THE SCIENCE POLICY TASK FORCE

Study	Agency	Due Date in 1985
Expertise in the Political Process	CRS	Draft Received
Nobel Prizes as Indicators of National Strength in Science	CRS	Draft Received
Compilation of International "Big Science" Facilities	CRS	Late May
Bibliography of National Academy Reports	CRS	Late May
Impact on Science of the Information Age	CRS	Late June
Social and Behavioral Sciences and their Contributions to Society	CRS	July
Support of Scientific Research by the DOD	CRS	July
History of Science Policy Since 1945	Staff Fellow	
Alternate Mechanisms of Research Support	GAO	September

GAO is asked to examine the array of federal funding mechanisms for science. For example, a preliminary review shows that the diversity of instruments and methods of funding research have been gradually narrowed, and the individual project grant is now the dominant mechanism. GAO is asked to study the relative merits of various funding mechanisms.

The Regulatory Environment for Scientific Research	OTA	September

This study will explore controls on scientific research and their effects on the quality of science. Recent controversies over research on recombinant DNA, research on humans and animals, and constraints on disclosure of research findings are examples of such controls. The study will outline contemporary attempts to regulate science. It will analyze how the effects of regulation on the quality of science might be measured and how current legislative actions reflect the regulatory climate.

Analysis of Demographics and Manpower	OTA	October

This study will examine demographic trends and manpower needs over the next 40 years, with particular emphasis on the outlook for U.S. research universities and their students and faculty.

Science Funding as an Investment	OTA	November

A traditional justification for federal support of science rests on the principle that the search for knowledge is intrisically valuable. More recently the justification has emerged that science funding is an investment. OTA is asked to examine models for funding high risk long term investments in other contexts and the relevance these have to funding science.

Financial Health of the Universities GAO December

GAO is asked to study how scientific research is funded at U.S. research universities, including their medical research centers. The purpose of this analysis is to provide "the broadest possible picture of how Federal funding for research fits into the total financial situation of this group of institutions." The study includes, "an analysis of the total sources of income for these institutions by major categories and includes resources being provided both in the form of money and in kind, an analysis of the extent to which research funds are used to fund both research activities and other institutional activities through various direct and indirect costs and reimbursements, and, conversely, the extent to which other funding sources, i.e., tuition, endowment income, and gifts, are used to support research activities, directly or indirectly." Data will be collected through a questionnaire, which is expected to sample 30 randomly selected universities on the NSF list of the top 100 research universities.

[COMMITTEE PRINT]

AN AGENDA FOR A STUDY OF GOVERNMENT SCIENCE POLICY

REPORT

PREPARED BY THE

TASK FORCE ON SCIENCE POLICY

TRANSMITTED TO THE

COMMITTEE ON SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

SECOND SESSION

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CONTENTS

INTRODUCTION

The last major Congressional review of American science policy took place in the mid-sixties, almost twenty years ago. Since that time, the relationship between science and government has undergone a number of significant changes, and there is every indication that further changes in that relationship are in prospect. In addition, the wider environment in which both government and science must function is expected to change in ways that will affect both science and the science-government relationship.

It is therefore timely that the Science and Technology Committee conduct a careful review of American science policy. Such a review will enable the members of the Committee, and the wider membership of the House of Representatives, to discharge their legislative and oversight responsibilities on the basis of a deeper understanding of past policies, present problems, and future needs and choices.

The proposed agenda presented in this report by the Science Policy Task Force represents our recommendations about the ground such a science policy study should cover. In our view, all of the individual items and questions we propose for consideration and study are closely related and together form the fabric of our science policy. We realize that the list of agenda items is long and may be difficult to cover in depth even with the expected two-year duration planned for the study. Nevertheless, the importance of this subject for the future of the country compels us to recommend that the entire subject be given the most careful and thoughtful study so that we can emerge with a deeper understanding and enhanced wisdom about the Federal Government's role in keeping America strong in science.

Science Policy and the Congress

The Federal Government's role as the principal source of the resources needed to advance science is comparatively new. Prior to 1945 it was limited to peaks of effort in support of major wars and specialized activities by those agencies of government which saw science as a way to acomplish their primary missions such as the Department of Agriculture. This limited role for the Federal Government gave way to a much stronger, ultimately dominant, role in the years following the end of World War II.

During the war years large numbers of scientists performed research directly related to the war effort. Funds were provided through the Manhattan Project for work on the atomic bomb, through the Office of Scientific Research and Development for work on a wide range of other military weapons, techniques, and medical problems, and through the military services to the universities for both training and R&D activities. This resulted in the de-

velopment of a spectacular array of science-based technologies which contributed significantly to the winning of the war. They included, in addition to the atomic bomb, the proximity fuze, radar, mass-produced penicillin, scientific techniques for anti-submarine warfare, and psychological methods for the selection and training of personnel.

As a result, public and Congressional support for the continuation of government support of science was strong, and the view that it should be broadened to include research with potential applications to the civilian sector of society was introduced. A number of new government agencies were created to continue and strengthen the close relationship with the universities. They included the Office of Naval Research and the National Science Foundation. Other established departments and agencies such as the National Institutes of Health and the Department of Agriculture also saw their science programs expanded and strengthened.

In the late Fifties, the launch of the Soviet earth satellite Sputnik, provided further impetus for public and Congressional support of science leading to rapidly growing budget allocations for science. A new emphasis on science education at all levels emerged, based on the need to train more scientists and engineers.

The resulting series of annual budget expansions lasted into the mid-seventies when a period of uncertainty and abrupt changes, began a period that is still with us. After a series of annual budgets in which the science component was essentially level, there has been a resumption of budget growth. That growth in science expenditures has been at rates equivalent to a doubling time of less than six years. It is unlikely that such rapid increases can be sustained, especially in view of the urgent need to close the deficit gap in the Federal budget.

The shift from a limited government role in providing support for science to a dominant role has of necessity meant a heavier involvement by the Congress in all aspects of that process. The Congress early recognized the importance of science to improved health, technological advance, and economic growth. The Congress has provided the institutional framework of new or augmented government agencies to administer those programs, and has responded to international developments, Executive Branch initiatives, and scientific opportunities with the allocation of substantial and frequent budget increases.

Yet, as in numerous other areas, there has been a strong tendency to make extensive changes in policy only under the conditions of crisis. Absent such conditions, debate on questions of resource allocation is normally restricted to the incremental increases proposed by the President in the annual budget. In our view the Science Policy Study offers a welcome opportunity to stand back in a non-crisis atmosphere and take the measure of our federal science policy in terms of both its relevance to national goals and its effectiveness in allocating sufficient resources to support science.

Scope of the Study

The scope of a study of science policy could vary widely, and would be interpreted quite differently depending on the time, the

circumstances, and the interests of the individuals involved. The term "science policy" itself is subject to differing interpretations, but in common practice is frequently used to cover policies for government support and encouragement of science and technology, ranging from basic research through applied research, advanced development, concept demonstration, and product development. When interpreted to encompass that broad range of activities, science policy includes such issues as patent policy, anti-trust policy, tax policy, and industrial innovation policy generally.

After a careful consideration of the appropriate scope for the Science Policy Study, and an evaluation of the advantages and disadvantages of a wide scope versus a more circumscribed scope, the Task Force recommends that the scope be limited to the issues of science policy in the narrow sense of government policies for the support of basic and applied research. This means excluding from the present study the issue of technology policy and the many policy questions which fall into that broad category. Our conclusion in this matter of the scope of the Science Policy Study is based on the following considerations.

We believe that any study to be done by the Committee should be of the highest quality. To achieve this will require extensive data gathering, careful probing of many issues and their correlated subjects, and in-depth analysis of each issue. Such a study can only be done if the scope is limited to a manageable number of issues, all of which preferably are related to each other. Science policy in the narrow sense constitutes, we conclude, such a group of issues. Furthermore, many of the issues in the wider interpretation of science policy are themselves as large, or larger than, the more narrowly defined study contemplated here and could therefore easily divert attention from the focus on basic and applied research policy. Consequently, we recommend that the Science Policy Study be limited to the role of the Federal Government in conducting and supporting basic and applied research.

Similar considerations were brought to bear in considering the extent to which the Science Policy Study should cover education and manpower issues in the area of science and engineering. While the Task Force fully recognizes the importance which mathematics and science education have at the high school and undergraduate college levels, it was concluded that only those aspects of science and engineering education which are directly related to research activities should be covered in the Study. In part this is due to the fact that several recent reports have dealt with the issues related to pre-graduate science education. In part this is also due to the great scope which a study of all science and mathematics education would entail, and the desire of the Task Force to keep the proposed Study within manageable boundaries. We therefore recommend that the Science Policy Study include science and engineering education and manpower issues as they are related to graduate and post-doctoral education in these fields.

Bipartisan Approach of the Task Force

From the time that the idea for a comprehensive science policy study first emerged, there was wide agreement that it should be

done on a fully bipartisan basis. That was the view of the several members who proposed the initiation of such a study as well as of the Chairman and the Ranking Minority Member of the Science and Technology Committee. We all share the view that the importance of science to the nation's future is high, and the need, therefore, to provide a strong leadership role by the Federal Government is not in dispute. The composition of our Task Force reflects that view.

A bipartisan approach to the work of the Task Force, and subsequently to the Science Policy Study itself, will not preclude that differences will arise on individual issues which form part of this study. Nevertheless, we recommend that the Science Policy Study be conducted in the same bipartisan manner as the work of the Task Force, an approach that proved workable and which we believe to be in the best interest of the nation.

The Past and the Future

We recognize that science policy is dynamic, ever-changing, and has a past and a future. That past, although comparatively short, is replete with changes that range from adjustments in the nuances of policy to major redirections in program orientation. Similarly, the future of science policy calls for sensitivity to important, but hardly detectable, emerging developments as well as the anticipation of major trends in the factors affecting science and science policy. In the conduct of the Science Policy Study an awareness of historical developments coupled with an acute sensitivity to emerging future needs will be crucial to the achievement of both wise judgments and sensible relevance. The Task Force recognizes that, in designing and conducting the Science Policy Study, a balance should be sought between attention to historical developments in American science policy over the last forty years and awareness of potential developments in science, in science policy, and in society as a whole.

Longer Term Objective

The Task Force is well aware that studies of important policy issues frequently have as their only result the drafting and publication of a huge report which is read by few and which accomplishes little. We urge therefore that, in the conduct of the Science Policy Study, the longer term objective of achieving a deeper understanding by members of the Committee should be a major objective.

This is not to suggest that an over-all report should not be produced, bringing together the conclusions and recommendations arising from the Study. But rather than a voluminous final report written without the active participation of the members of the Committee, we recommend that the Committee's final report be short and succinct and that it be considered only one of the several end products of the Science Policy Study.

Data Based Study and Analysis

A prominent anomaly of past and current science policy making has been the very limited use of quantitative information. In neither the evaluation of past programs nor in the development of new initiatives has the arena of science policy formulation seen the use, to any significant extent, of hard data and quantitative analysis. In this respect science policy differs in a noticeable way from policy-making in such fields as defense policy, social security policy, and many others.

The Task Force believes that in many areas of science policy the data is available and the policy making process could potentially benefit from its use in the associated analysis. We recommend therefore that in the conduct of the Science Policy Study, particular attention be given to the definition of the issues, the formulation of the questions, and the enunciation of the recommendations in a manner which will permit quantitative approaches to be brought to bear when possible. Equally important, a concerted effort should be made to evaluate existing programs with the prominent assistance of such quantitative methods.

We are conscious of the limitations of such quantification, especially in a field of public policy which is characterized by a high degree of uncertainty and a noticeable degree of reliance on individual insight and creativity. Nevertheless, we believe that the time has come to supplement, although certainly not replace, the traditional science policy process with a strong component of quantitative analysis, an approach which has proven so successful in science itself.

Structure of Agenda

In considering the wide range of topics which must be included in the agenda, even under the agreed narrow scope for the Science Policy Study, we have sought to arrive at a reasonable degree of coherence. The topics have therefore been organized under major subject categories and subheadings. However, some duplication was found unavoidable. For example, the focus on accountability in research will be found both in the initial chapter on goals and objectives and in the concluding chapter on the role of the Congress. Where it occurs, such repetition is intentional.

IX. Funding Mechanisms

An array of particular funding mechanisms and instruments, such as peer review and grants, are used to provide the government's research funds to organizations and individuals. These mechanisms have a profound effect on all aspects of the scientific enterprise, and are the focus of continuing discussion and debate. The Task Force recommends that the funding mechanisms used to support science be examined as part of the Science Policy Study.

A. ALTERNATIVE SYSTEMS OF FUNDING SCIENTIFIC RESEARCH

A cursory review of the funding mechanisms used by Federal agencies over the last 20–30 years shows that the diversity of instruments and methods of funding scientific research has been gradually narrowed. The variety of these funding instruments included Senior Investigator Grants, formula grants of various types, and block grants of many varieties. In their place, the project grant has achieved growing prominence as the principal method of providing funds for reseach.

1. To What Extent Should the Present Dominance of the Project Grant System for the Support of Scientific Research Be Gradually Replaced with a More Pluralistic Form of Support?

The project grant approach has many advantages, chief among which is that it maintains a strong degree of competition. This helps ensure that the available resources are expended on the best projects and that the system is open to new ideas and all researchers. But the system is also under considerable strain. There has long been complaints from scientists that the associated practice of basing project grants on unsolicited proposals involves a disproportionate amount of effort and paperwork. It is also claimed that the practice of judging the relative merits of the proposed projects by means of peer review does not ensure an open system, but introduces instead a strong degree of conservatism and reluctance to support unconventional research ideas. Recently, it has been claimed that the workload required to review proposals and the requirements for disclosures about personal finances have increased to the point that a growing number of scientists, especially among the leading, mature investigators, are declining to serve as reviewers. These points all serve to suggest that the time has come to ask if the trend toward sole reliance on project grants should be reversed in favor of a system which increasingly uses a greater diversity of funding mechanisms that more closely meet the needs of scientific research.

2. What Lessons Can Be Learned from the Mechanisms of Science Support Used in Other Advanced Industrial Countries?

In addition to reviewing alternative funding mechanisms used by various agencies at various times in the United States, it might well be highly useful to determine what funding methods are used in other advanced, industrial countries. While none of these methods may be directly transferable from the particular circumstances found elsewhere, there may be elements of such systems that would be highly useful. We frequently have heard mention, for example, of the Max Planck Institutes in Germany as a form of organizational arrangement outside the university setting which permits high quality research to be conducted. Other modes and practices may be of equal interest and they should all be studied as part of the Science Policy Study.

B. THE SELECTION PROCESS AND THE ROLE OF PEER EXPERTS

Underlying much of the present grant system is the belief that the best results are obtained through competition based principally on potential scientific merit. Because such judgments frequently can be made only by other scientists who are experts in the same field of science, the peer review method of deciding project competitions has become prevalent. But this system also appears to be biased against radical, high-risk research project proposals and against younger investigators. It also suffers from a high degree of centralization and much paperwork. We therefore recommend that the Science Policy Study include on its agenda a careful review of the presently used selection processes for scientific research projects, their advantages and disadvantages, and their relative merits in comparison with other possible selection methods.

1. Should the Present System of Peer Review and Competition Be Modified?

The peer review system operates differently from agency to agency and even within some agencies. Under some operating modes the peers provide their comments by mail and thus never meet face to face, while other systems involve formal meetings and discussions in Washington or elsewhere. As indicated previously, occasional complaints have surfaced to indicate that the workload of those serving as peer reviewers is trending toward a level where some of the better scientists are reluctant to continue their service as reviewers. On a more general level, concern has been expressed that while this system works well in periods of rapid growth, it may be less well suited to periods where a particular field of science is not growing. On the other hand, many have noted the very great advantage which some form of competition yields in comparison with systems in other countries which involve less, or no, competition. We are also cognizant of the strong attachment which many, but not necessarily all, scientists have to the peer review system. Thus we recommend that one approach to the reduction of the undesirable aspects of the present project selection method that should be considered is the evolution of changes which would mo[illegible]he system to reduce its weaknesses without eliminating its ba[illegible]engths.

2. What Are the Advantages and Faults of Alternative Systems?

A more far-reaching way of rectifying the known problems of the present project selection system would be the adoption, wholly or partly, of quite different methods of providing research support. Such methods might include junior investigator grants and career development grants, involving support for individuals rather than projects, various forms of block or formula funding which would support institutions or groups, or, alternatively, project awards made on the basis of program manager judgments, geographic distribution criteria, or cost considerations. Any of these alternatives are likely to have distinct advantages as well as faults, and we urge that each be carefully weighed on its own merits and in comparison with the present methods as part of the review of the support selection process.

C. STYLES OF RESEARCH SUPPORT IN DIFFERENT FIELDS OF SCIENCE

A review of the variety of modes or styles in which government support for scientific research is provided, suggests that the degree of centralization or decentralization varies greatly. For example, a high degree of decentralization is found in some parts of agricultural research. The Department of Agriculture supports a comprehensive system which involves, in addition to research, extension and teaching activities. Funds for this system are provided through formula grants to the land grant colleges, the so-called "Hatch Act funds". At the other end of the spectrum, the National Institutes of Health and the National Science Foundation support research chiefly through project grants to individuals. Projects are selected on the basis of nationwide competition and peer review. In recent years, however, competitive grants have been introduced into the agricultural research system to supplement the formula grants. At the National Science Foundation and the National Institutes of Health, small but significant programs of support for limited areas of science such at materials research is being provided in the form of block grants. We recommend that these widely varying styles of research be compared and evaluated as part of the Science Policy Study.

1. Are Differing Styles of Research Support Optimum for Particular Fields of Science?

While we note the wide spectrum of styles used for the support of research in different agencies, little is available to explain why these different styles are being used. Apart from the historical evolution of the program, it is not clear whether certain types of research, for example basic or applied, or certain disciplines, for example biological or physical, thrive better under one style of support or another. In the event a correlation of support style with productivity exists, that should be ascertained and applied more widely.

2. Should Future Funding Systems for Research Mix the Two Styles of Funding?

It appears possible that the optimum mode of supporting scientific research may be a mix of formula or block grants and [illegible]eti-

tive project grants. The instances where experience with this mixed style of support has been developed should be included in the examination of the effectiveness of the different research support modes.

3. Has One Mode of Research Support a Higher Chance of Yielding Technological Pay-Off?

A basic question in evaluating the various modes of research support is how the different modes contribute to the transfer of research to the users who can apply them in the form of technology or cures for disease. For example, it has long been recognized that the agricultural research system has been highly successful in providing the results of research to the farmer. Whether this is due to the formula mode of research support is not clear. Conversely, the recent lag in technological innovation often is viewed as occurring in areas where research in the physical sciences might have been expected to make major contributions, and these fields of science are largely supported through project grants. The Science Policy Study's review of research support styles should attempt to determine if a relationship exists between such styles and the level of practical application.

D. SECONDARY EFFECTS OF PRESENT FUNDING MECHANISMS

The presently used mechanisms for providing support of scientific research may, on the whole, be achieving the primary aim of advancing science. However, it is becoming evident that these mechanisms also have significant secondary effects on scientists and the institutions in which they do their research. In our view, these secondary effects can not be neglected. They should be identified, both in terms of the effects produced by the existing support mechanisms and in terms of any proposed new or altered support mechanisms that may energy from the Science Policy Study.

1. Should the Federal Government Be Concerned about These Secondary Factors?

Many of the secondary effects arising from the presently used research funding mechanisms occur wholly or partly within the research institutions. As such their impact is chiefly a matter of concern to those institutions. At the same time the funding mechanisms are established by the government, and the government in the long run has an interest in assuring that the research institutions are healthy and viable. The balance between institutional autonomy and government interest should be carefully observed in the view of the Task Force. The cooperative spirit between the government and the research community should, in our view, be preserved and enhanced, and the development of an adversarial relationship should be avoided.

2. Is "Getting Research Grants" Replacing the Actual Conduct of Research as an Incentive for Some University Scientists?

One suggested effect of the present project grant system in its interaction with the universities and their system for rewarding and promoting individual scientists on their faculties is said to be

that it has become more important to obtain research grants than to conduct actual research work. The prevalence of this practice should be determined, if feasible, along with its good and bad effects, and the desirability of making adjustments in the funding mechanisms.

3. To What Extent Do the Present Funding Mechanisms Provide Incentives and Disincentives for Research Fund Raising, Industrial Cooperation, Patient Care, and Undergraduate Teaching?

The scientists who are engaged in research at universities, medical research centers, and other institutions have a number of other duties such as patient care and undergraduate teaching. The institutions similarly have duties other than raising research funds from the Federal agencies. These include fund raising from private donors, and cooperation with industrial firms and many other functions. It has been noted that the present mechanisms of providing Federal research funds may in some cases serve as disincentives for carrying out these other activities. This should be reviewed as part of the Science Policy Study, and, if possible, corrective measures should be recommended.

4. Would Growing Institutional Funding Lead to Growing Government Influence in Research Institutions?

Any shift in the use of funding mechanisms which would increase the reliance on funding mechanisms that provide support to institutions rather than to individuals might potentially lead to expanded government influence on the institutions. Past experience with such funding mechanisms should be carefully reviewed in designing new approaches to institutional support research funding.

E. THE COST OF RESEARCH

To a considerable extent the discussions about government funding of university research activities have become centered on a group of technical issues. These are issues having to do with what it costs to carry out research in an institutional setting and how many of the costs less directly related to such research should or should not be borne by the government. Because of their impact on both the financial health of the universities and on the costs to the government, we recommend that these technical issues be included within the scope of the Science Policy Study.

1. What Accounts for the Gradual Increase in Indirect Cost Rates, and Is This Growth Desirable or Undesirable?

For most grants and contracts the direct costs, consisting of salaries, materials, publication costs, etc., are supplemented by the so-called indirect or overhead costs. These presumably pay for such associated costs as building maintenance, heating, and shared clerical support. A slow but steady growth of the indirect cost rate has been noticeable over the last five years. This growth has meant that for every dollar provided to a research institution a smaller and smaller fraction goes to the direct cost of doing research, while a mounting fraction goes to defray general institutional costs. The nature of this shift, if in fact it is widespread, should be

ascertained and its longer term implications should be carefully examined.

2. Is It Possible to Replace the Present Complex Indirect Cost System with a Better System?

The present system by which government agencies pay the research institutions for their indirect costs involve the careful and detailed audit of the institution's books after the costs have been incurred. The government auditors must determine whether a given expenditure is allowable under the current rules and how much is allocable to a particular grant. Frequent disagreements occur between the university officials, who seek to recover as much of their costs as possible, and government auditors, who seek to include only those cost items reasonably chargeable to the government projects. Because of differences in institutional accounting practices, the overhead rates vary from institution to institution. It has occasionally been suggested, most recently in a 1984 study by the General Accounting Office, that a fixed overhead be established for all research grants at all institutions. This would eliminate the need for the complex and controversial accounting rules and the extensive auditing needed to ensure compliance with them. However, the research institutions have resisted such an approach, in part because they feel that if the rate were set too low, it would mean a substantial loss of revenue to cover many of their administrative costs. In more general terms, the underlying question is how much of the institutional operating costs should be borne by the agency sponsoring individual research projects at research institutions. Institutional grants for this purpose also have been considered to deal with this question, and we recommend that this entire question be examined as part of the Science Policy Study.

3. Has Cost Sharing Worked in the Past and Is It Feasible in the Future?

In the early postwar years when the Federal Government embarked on an expansion of support for science at American universities, there was a strong belief that this should be done in the form of partial assistance to such research, rather than complete funding. There were concerns that complete funding could lead to undue government interference in the research being done and in the internal operation of the university. There was also a feeling that, while the research being done would benefit the government, it also would benefit the institution and the professor in charge by providing training of graduate students, professional growth for the scientist, and some measure of enhanced status to the university. Based on such considerations, the principle of cost sharing between the government and the university was established for the funding of research. In practice, however, this principle is not widely used. In some cases cost sharing is less than one percent, and it may well have lost both its actual and symbolic effects. We recommend that the principle and practice of cost sharing be reviewed as part of the Science Policy Study and that a clear-cut policy for this practice be sought.

AGENDA
COUNCIL OF ACADEMIC SOCIETIES
ADMINISTRATIVE BOARD

June 19, 1985

6:00 - 7:00 p.m. Military Room	JOINT ADMINISTRATIVE BOARDS MEETING "The Direction of National Science Policy"
7:00 - 7:45 p.m. Map Room	JOINT ADMINISTRATIVE BOARDS RECEPTION
7:45 - 9:00 p.m. Caucus Room	JOINT ADMINISTRATIVE BOARDS DINNER

June 20, 1985

8:00 a.m. - 12 Noon Independence Room	CAS ADMINISTRATIVE BOARD MEETING
Noon - 1:00 p.m. Hemisphere Room	JOINT ADMINISTRATIVE BOARDS LUNCHEON

AGENDA
COUNCIL OF ACADEMIC SOCIETIES
ADMINISTRATIVE BOARD

June 19-20, 1985

MINUTES
COUNCIL OF ACADEMIC SOCIETIES
ADMINISTRATIVE BOARD

April 3-4, 1985
Washington Hilton Hotel
Washington, D.C.

PRESENT: Board Members

Virginia V. Weldon, Chairman
Philip C. Anderson
David H. Cohen
William F. Ganong
Harold S. Ginsberg
Robert L. Hill
A. Everette James, Jr.
Joseph E. Johnson, III
Douglas E. Kelly
Jack L. Kostyo
Frank M. Yatsu

Staff

Christine Burris
John A.D. Cooper*
Carolyn Demorest
Len Koch*
David Moore
James Schofield*
John F. Sherman*
Elizabeth M. Short
August G. Swanson

Guests

J. Robert Buchanan*
Donald G. Langsley
Richard Wilbur

* Present for part of the meeting

I. GPEP FOLLOW-UP ACTIVITIES

The CAS Administrative Board met in joint session with the COD Administrative Board at 5:30 p.m., Wednesday, April 3, 1985, to discuss the Association's follow-up to the Report of the Panel on the General Professional Education of the Physician and College Preparation for Medicine (GPEP). Drs. Douglas Kelly and Edward Stemmler, chairmen of the CAS and the COD Working Groups on GPEP, respectively, cochaired the meeting.

Both Dr. Kelly and Dr. Stemmler described their groups' discussion of constituent reaction to the report and attempts to identify areas of possible action by the AAMC. Dr. Kelly noted the wide variation in response by the faculty societies, ranging from praise for the report as a stimulus for addressing a number of legitimate problems to criticism that the report was vague, set an idealistic rather than a practical tone, and did not speak to a variety of issues despite input to the panel from faculty groups. Dr. Kelly explained that the CAS Working Group had attempted to put together a document that provides some clarifications of what the

group felt were misinterpretations by the faculty as to the intent of the panel. This document also contains several specific recommendations for AAMC activity.

Dr. Stemmler emphasized that the COD Working Group had recognized that the initiative will have to be taken by responsible bodies (the schools, the AAMC, other national associations) if anything useful is to come out of the report. The COD Working Group focused on identifying those issues that should be addressed by the schools themselves, those issues where the AAMC should assist the schools, and those issues that will require the involvement of other associations outside the AAMC or perhaps broad efforts by the university community at large.

After an extended process discussion, the Boards attempted to identify those areas within each conclusion where a consensus could be reached on the role of the AAMC in either directly implementing or assisting the individual schools in implementing the specific recommendations of the report. The Boards reached agreement on several of the general principles expressed in the report, but they had little success with specific recommendations. It was agreed that the two working groups would meet to discuss further AAMC activities and possible prepare a document for consideration by the individual boards at the June meeting.

Following the adjournment of the meeting, the CAS and COD Administrative Boards held a joint reception and dinner.

II. BUSINESS MEETING

A. ACTION ITEMS - CAS Board

1. The minutes of the January 23-24, 1985 meeting were approved as published.

2. Program for the CAS Annual Meeting Plenary

The Board discussed possible themes for the Sunday Plenary program at the Annual Meeting. Dr. Short explained that this was being done now so that topic could be included in the preliminary AAMC program for the meeting. She also said that the general theme for the entire meeting is "From Flexner to Cooper and Beyond: The Road to Quality in Medical Education."

Dr. Swanson noted that the CAS had focused on GPEP at the last two annual meetings and asked if perhaps the Board should consider a topic related to biomedical research. He suggested a theme centered around two or three major advances in biomedical science that are going to have a significant impact on medicine during the next 10 to 20 years, emphasizing how to incorporate these advances into the educational strategy for the future.

Other suggestions included the interactions between biotechnology and academia, which would focus on such issues as the displacement of high technology outside the teaching hospital and its effect on academic access; preservation of the quality of

medical education in a competitive, entrepreneurial environment; and the impact of technology and information transfer on medical education. The Board also considered possible speakers for each topic and the types of small group discussions that could follow the plenary session.

ACTION: The CAS Administrative Board recommended that the theme for the plenary session at the 1985 Annual Meeting should be "The Impact of Scientific Discovery on Medical Education and Clinical Practice."

3. CAS GPEP Working Group

Dr. Weldon asked the Board for their reaction to the suggestion that the CAS and COD Working Groups meet to attempt to produce a consensus document that might be labeled a commentary on the GPEP report. Board members generally agreed on the utility of the CAS commenting on the recommendations of the GPEP panel; however, there was vigorous discussion about whether such a commentary should be developed in conjunction with the COD Board.

Some Board members emphasized the need to represent the CAS constituency in any document that the Board might endorse. They expressed skepticism that a consensus document written with the deans would represent the faculty perspective adequately. They noted that the deans had not yet developed a consensus among themselves, which would make it difficult for the two groups to reach agreement.

Other Board members pointed out that such a meeting would present an opportunity to clarify those areas that were being misread or misinterpreted. They stressed the advantage of persuading the deans to the faculty's concerns, which would result in a stronger document that would be more widely accepted. They also noted that an objective should be to identify AAMC initiatives, which should be done in conjunction with the deans. In addition, meeting with the deans would not preclude the options of a separate CAS document if a consensus could not be reached. A joint document is desirable only if it can be produced without further delays. Concern also was expressed about the agenda for a meeting between the two working groups. Several Board members stated a desire to table the two documents already produced and to concentrate on the issues.

The Board finally agreed that the CAS and COD Working Groups should meet to discuss the issues raised by the GPEP report, rather than to respond to either or both of the existing documents previously prepared by the working groups. At the same time, recognizing that a consensus might not be reached on a number of issues, the Board decided that it should be prepared to produce a separate CAS document. After an extended discussion on several specific points within the current CAS draft, it became apparent that the Board could not endorse the document without revisions. The Board requested that Dr. Kelly redraft

the document for possible circulation to the Board prior to the June meeting, pending the outcome of the meeting of the working groups.

ACTION: The CAS Board requested that its Working Group on GPEP Follow-up meeting with the Working Group from the COD to discuss the various issues presented by the report of the GPEP panel.

4. Selected Issues in Federal Research Policy

The Board discussed whether there were significant issues in the area of federal research policy that warranted the establishment of a formal AAMC Committee to address them. Dr. Short described the Task Force on Science Policy that has been created by the House Committee on Science and Technology Policy. She noted that a number of the questions being raised by this Task Force are particularly relevant to biomedical and biobehavioral research, especially in the areas of infrastructure, training, and funding.

Dr. Cooper raised the question of whether there were any issues that were not addressed by the Association's "Principles for the Support of Biomedical Research." Several Board members expressed the belief that the Association had not developed positions on all of the areas under consideration by the Task Force. In addition, the Board felt that the questions being asked, both by the Congress and at the NIH, will require a response that is more specific than what is covered by the "Principles" document.

The Board also discussed the utility of an ad hoc committee to follow the activities of the Task Force and respond as needed. Dr. Cooper noted that the tradition of the AAMC is to appoint ad hoc groups to address specific problems. He suggested that if a committee is formed, that it be specifically charged to respond to the Task Force.

ACTION: The CAS Administrative Board agreed to recommend to the Executive Council that the AAMC form an ad hoc committee on biomedical research policy to respond to the issues raised by the House Task Force on Science Policy.

B. ACTION ITEMS - Executive Council

1. Addition to the General Requirements for GME

Dr. Swanson outlined the background on the ACGME recommendation for a clinical evaluation requirement for accredited residencies. In addition to the points listed in the Executive Council write-up, Dr. Swanson noted that the General Requirements already contain a section which essentially charges programs to evaluate the skills of their students. Thus, the current recommendation is redundant and also unlikely to solve the problems of the foreign medical graduates. He also pointed out that AAMC

ratification is necessary for the requirement to be approved. He recommended that the Board vote against ratification.

ACTION: The Board voted unanimously to support the recommendation that the Executive Council not ratify the addition of the proposed requirement to the General Requirements. In addition, the Executive Council is to request that the ACGME develop a hands-on clinical skills examination to evaluate graduates of non-LCME accredited schools.

2. LCME Standards for Accreditation of Medical Education Programs

Drs. Buchanan and Schofield explained the background of the current draft of the "Functions and Structure of a Medical School; Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree." Approval of the document by both the Council on Medical Education of the AMA and the AAMC is necessary for the new standards to be ratified. Dr. Buchanan stressed the urgent need for the new standards in dealing with various accreditation problems. The Council of Medical Education of the AMA has already approved the document.

ACTION: The CAS Administrative Board voted unanimously to approve the proposed standards and recommend approval by the Executive Council.

3. NIH Reauthorization Legislation

The Board discussed the upcoming legislation to be introduced by Representative Henry Waxman to reauthorize various programs at the NIH. This legislation is believed to be virtually identical to S.540, which was passed by the Congress last fall, but subsequently vetoed by the president. Staff recommended that the AAMC continue its opposition to the Waxman version of this legislation. Dr. Sherman noted that Representative Waxman may be considering inclusion of a provision that would specify a number of grants for NIH, thus avoiding future interference by the Office of Management and Budget. Such a provision would further deflect attention away from the serious flaws in this legislation. Dr. Short stressed that there is also the potential for a yearly reauthorization as well.

ACTION: The CAS Administrative Board voted unanimously for the AAMC to continue to oppose NIH reauthorization legislation that diverges from traditional Association policy in this area, as stated in the "Preserving America's Preeminence in Medical Research."

4. OMB Proposal to Reduce Research Project Grants

The Board discussed support for the various legislative proposals currently before the Congress to restore funding for fiscal 1985 for the NIH and ADAMHA to the amounts originally appropriated. Dr. Sherman described recent developments, particularly reaction to the opinion from the General Accounting Office that the OMB's actions are illegal.

ACTION: The CAS Administrative Board voted to recommend that the Executive Council endorse any reasonable legislative proposal or other agreement to restore funds originally appropriated for the NIH and ADAMHA.

5. Proposed Department of Science

The Board discussed administration proposals to include the Public Health Service in a Department of Science. Dr. Sherman described the rationale for the staff's recommended opposition to such a move, particularly in terms of the harmful effects this type of reorganization would have for biomedical research policy and funding. The Board also discussed the possibility that this issue might be further addressed by the AAMC committee on biomedical research policy.

ACTION: The CAS Administrative Board voted unanimously to continue to disapprove any proposal to include the Public Health Service in a reorganization of federal research programs into a Department of Science.

C. DISCUSSION ITEMS - CAS

1. CAS Nominating Committee

Dr. Short informed the Board that Dr. Cohen would chair the CAS nominating committee because the chairman of the CAS nominating committee represents the CAS on the AAMC nominating committee, and Dr. Weldon is already on the AAMC committee as chairman-elect of the assembly. Dr. Short also explained that there are five vacancies on the Board to be filled for next year because Dr. Johnson has been named dean at the University of Michigan and Dr. Ginsberg is going on sabbatical at the NIH and will no longer be representing the Association of Medical School Microbiology Chairmen. The position of chairman-elect of the CAS is to be filled by a representative from a clinical science society. Finally, when Dr. Weldon becomes chairman of the assembly, the CAS will have only three representatives on the Executive Council.

D. DISCUSSION ITEMS - Executive Council

1. Comprehensive National Board Examination

Dr. Swanson reviewed the proposal of the National Board of Medical Examiners to institute a comprehensive examination on the basic and clinical sciences. The NBME has expressed concern

that Parts I and II of the current exam, which was developed for licensing, are now being used inappropriately to evaluate students for advancement in medical school. Dr. Swanson outlined the changes in the composition and score reporting for this exam that are necessitated by this decision. The Board also discussed some of the implications of a national examination to evaluate the progress of medical students. Dr. Swanson stated that at present there will probably be no national push to have the institutions use this exam, that the question of whether more institutions will in fact use the exam is open, and that the changes in the exam are not consistent with the report from the GPEP panel. The Board decided that there was no useful position that the AAMC could take on this issue at present, but that the situation should be followed.

2. Financing Graduate Medical Education

The Board discussed a number of the issues that have been identified by the AAMC Committee on Financing Graduate Medical Education, including the need for special funding for graduate medical education, the advisability of creating a societal funding mechanism, the number of training years to be funded, the increasing use of non-hospital sites for residency training, and the responsibility for training physicians trained in foreign medical schools. The Board also reviewed the responses of the CAS and COD to the questionnaire on financing graduate medical education that was circulated during the spring meetings of the two councils. In the absence of a specific policy statement from the AAMC committee, the Association will maintain the position adopted at the January Executive Council meeting to oppose any change or reduction in the passthrough for direct medical education costs until a comprehensive assessment of financing graduate medical education is completed.

3. AAMC ad hoc Committee on Animals in Research

Dr. Short described the AAMC ad hoc committee that will be formed to develop a series of institutional recommendations to respond to certain problems surrounding the use of animals in research. The committee is expected to produce a brief booklet that will provide suggestions to the institutions on such items as accreditation, security, and media relations.

MINUTES
NOMINATING COMMITTEE
COUNCIL OF ACADEMIC SOCIETIES

May 24, 1985

PRESENT:	Committee Members	Staff
	David H. Cohen, Ph.D. Chairman, Presiding John M. Bissonnette, M.D. William R. Drucker, M.D. George A. Hedge, Ph.D. William P. Jollie, M.D. Louis M. Sherwood, M.D. Virginia V. Weldon, M.D.	Elizabeth M. Short, M.D. David B. Moore

The CAS Nominating Committee met by conference call on May 24, 1985, to select the slate of nominees to be presented at the Fall CAS business meeting. Prior to the conference call, background materials were circulated for review by the committee members.

As a result of the customary rotation of the Board members between the basic and clinical sciences, one basic and two clinical science positions will be vacant, and the position of Chairman-Elect for the CAS is to be filled by a clinical scientist. In addition, the committee was to nominate a basic scientist to fill the unexpired term of Dr. Ginsberg.

Potential nominees were chosen from among the official Representatives of the 79 member societies. They were nominated on the basis of their past experience in CAS/AAMC activities as well as their status within their own disciplines. The committee attempted to maintain a broad representation of disciplines on the Board.

The following is the slate developed by the Nominating Committee:

CHAIRMAN-ELECT

Frank G. Moody, M.D., Society of Surgical Chairmen, Houston, TX

BASIC SCIENCES

For a three-year term:

Joe Dan Coulter, Ph.D., Society for Neuroscience, Iowa City, IA

For a one-year term:

Gordon I. Kaye, Ph.D., Association of Anatomy Chairmen, Albany, NY

CLINICAL SCIENCES

For three-year terms:

Robert M. Epstein, M.D., Society of Academic Anesthesia Chairmen, Charlottesville, VA

Ernst R. Jaffé, M.D., American Society of Hematology, Bronx, NY

All of the nominees have agreed to serve if the nomination is ratified by the full Council at the Annual Meeting.

The CAS Nominating Committee recommended that Edward Stemmler, M.D., a past chairman of the Council of Deans, be nominated for Chairman-Elect of the AAMC Assembly.

Note: The Rules and Regulations for the Council of Academic Societies call for the CAS Administrative Board to select the four CAS representatives to the Executive Council. By tradition, three of these representatives are the chairman, chairman-elect and immediate past-chairman of the CAS. The Administrative Board should choose the fourth representative from the remaining Board members listed below at the June Administrative Board meeting.

Representative	Term Expiration
William F. Ganong, M.D.	1986
Gordon I. Kaye, Ph.D.	1986
Jack L. Kostyo, Ph.D.	1986
A. Everette James, Jr., M.D.	1987
Douglas E. Kelly, Ph.D.	1987
Frank M. Yatsu, M.D.	1987
Joe D. Coulter, Ph.D.	1988
Ernst R. Jaffé, M.D.	1988

COMMENTARY ON THE GPEP REPORT

Subsequent to the joint meeting of the Council of Deans and Council of Academic Societies Administrative Boards to discuss the GPEP Report on April 3, 1985, the working groups of both boards held a combined meeting. The commentary on the following pages evolved from the discussion at that meeting and subsequent editorial revisions by members of both groups.

Recommendation:

That the Council of Deans and Council of Academic Societies Administrative Boards critically review the commentary and consider whether it should be sent for information to the membership of the two Councils or presented to the Executive Council as an Association response to the GPEP Report.

D R A F T

COMMENTARY ON THE GPEP REPORT DEVELOPED BY A COMBINED WORKING GROUP*

REPRESENTING THE ADMINISTRATIVE BOARDS OF THE

COUNCIL OF ACADEMIC SOCIETIES AND THE COUNCIL OF DEANS

INTRODUCTION

In September 1984, the AAMC Executive Council commended the GPEP report, Physicians for the Twenty-First Century, to AAMC's membership as an "extraordinarily useful agenda of issues to be considered by each faculty." The report has already stimulated many medical faculties to undertake reassessments of the educational programs they provide for medical students. It is not prescriptive and serves well as a stimulus for discussion. In its brevity, however, it lacks guidelines or specific solutions that faculties might adopt.

Convinced that the GPEP report would benefit from a commentary on its five conclusions and the accompanying recommendations, the Administrative Boards of the Council of Academic Societies (CAS) and the Council of Deans (COD) appointed working groups to study the document. The commentary that follows is based upon the deliberations of the combined working group of these two councils.

The members of the combined working group believe that most of the conclusions and some of the recommendations of the GPEP panel, if implemented, would change significantly how medical students are educated in North America. There is no doubt that the steps called for in this implementation would be difficult. How medical schools will proceed to capitalize upon the recommendations of this report to enhance the individual educational programs of each school cannot be determined by those external to those programs. Recognizing and appreciating the distinctly unique character of each institution, the combined working group did not fashion a commentary that would presume to preempt the local prerogatives of these complex institutions.

* Draft prepared for discussion by the Administrative Boards of both councils June 1985.

COMBINED WORKING GROUP

Council of Academic Societies Administrative Board Members

DOUGLAS E. KELLY, PH.D., Cochairman; Representative, Association of Anatomy Chairmen; and Chairman, Department of Anatomy and Cell Biology, University of Southern California School of Medicine

PHILIP C. ANDERSON, M.D., Representative, Association of Professors of Dermatology, Inc.; and Chairman, Department of Dermatology, University of Missouri, Columbia, School of Medicine

DAVID H. COHEN, PH.D., Representative, Society for Neuroscience; and Professor of Neurobiology, State University of New York, Stony Brook, School of Medicine

JACK L. KOSTYO, PH.D., Representative, American Physiological Society; and Chairman, Department of Physiology, University of Michigan Medical School

FRANK G. MOODY, M.D., Representative, Society of Surgical Chairmen; and Chairman, Department of Surgery, University of Texas, Houston, Medical School

Council of Deans Administrative Board Members

EDWARD J. STEMMLER, M.D., Cochairman; Dean, University of Pennsylvania School of Medicine

ARNOLD L. BROWN, M.D., Dean, University of Wisconsin Medical School

JOHN E. CHAPMAN, M.D., Dean, Vanderbilt University School of Medicine

RICHARD H. MOY, M.D., Dean and Provost, Southern Illinois University School of Medicine

RICARDO SANCHEZ, Chairman, Organization of Student Representatives; and Fourth-Year Medical Student, Brown University Program in Medicine

COMMENTARY ON CONCLUSION 1

This general conclusion relates to a need for emphasis on skills, values, and attitudes in medical education; a reduction in the volume of factual information medical students are expected to commit to memory; better enunciation of the levels of knowledge required at each step in medical education; changes in educational settings; and the need for an emphasis on the responsibility of physicians to patients and communities.

The combined working group notes that this conclusion has been viewed by some as antiscience, but it is convinced that this was probably not the intent

of the GPEP panel. Medical education must always have a balanced emphasis between the scientific and humanitarian aspects of medicine. Medical students must be well prepared to use the scientific method and to apply analytical skills. They must understand the creation and flow of knowledge and the relevance of scientific concepts to patient care. Understanding and applying the scientific method are essential skills for both basic scientists and clinicians. Students must be educated to function as physicians with current, scientific insight and logic, and they must develop analytical skills that are effective in clinical contexts.

The responsibility for fostering the effective use of the scientific method and analytical skills lies with both basic scientists and clinicians, working together in a coordinated plan. In their scholarly function, involving both education and research, they should seek to preserve a balance between scientific and humanitarian values and develop them to increasing levels of sophistication and effectiveness throughout medical education.

The combined working group interprets the phrase "essential knowledge" to mean the concepts and principles necessary for continued intellectual growth and learning that all physicians must have as they embark upon their graduate medical education. It is not simply a minimal collection of relevant facts to be memorized as the "core knowledge" all physicians should have.

COMMENTARY ON CONCLUSION 2

The working group commends the recommendations of this conclusion as properly calling for breadth and rigor in baccalaureate education. A broad range of course work is also recommended to improve writing and communication skills and to assess the analytical skills and capabilities for independent learning of students applying to medical school. The combined working group views these aspects as constructive. Unfortunately, the conclusion specifically

recommends also that science course requirements be reduced to the core courses required of all undergraduate college students without characterizing such courses.

While it is agreed that an arbitrary quantity of baccalaureate science work will not ensure adequate preparation for the study of medicine, the combined group noted that physicians must be skilled in the biological sciences. They stressed that aspirants must experience and demonstrate an aptitude for science and that there is a need for improved quality and sophistication in baccalaureate science education, particularly in biology. The combined working group believes this goal can be accomplished without sacrificing educational breadth. It recommends that AAMC provide general advocacy for the achievement of a baccalaureate degree before students enter medical school. AAMC might also initiate a collaborative effort, shared by the major associations of higher education, to achieve the basic purposes of this recommendation, that is, the kind of preparation in the sciences that should be attained by an educated public.

There is presently no adequate substitute for the Medical College Admission Test (MCAT) as a guide in the admissions process. There is a need, however, for the AAMC to conduct continuing reviews of the test to determine its adequacy in meeting the objectives for which it has been devised. It is also necessary that admissions officers and members of medical school admissions committees be trained in the proper interpretation of the MCAT scores.

COMMENTARY ON CONCLUSION 3

The recommendations of this conclusion are aimed largely at the modes of presentation of instruction during the medical school years, particularly those devoted to the basic sciences. Medical school faculties are urged to set attainable educational objectives, allow more unscheduled time in the

curriculum, reduce dependency on lectures as the principal method of teaching, and increase activities that will enhance independent learning and capability for problem solving. This section of the GPEP report has disappointed a number of basic and clinical scientists who feel that the GPEP panel failed to address many aspects of the problems currently encountered in the early phases of medical education, particularly the loading of additional courses into the preclinical phase.

It is essential that curricular schedules be developed with an awareness of reasonable student work loads. It is probably not advisable to require more than 20 to 25 hours of organized sessions per week. Nor is it advisable to schedule more than five simultaneous courses into this weekly effort.

Curricula should be organized around central concepts that are articulated in "sequential prioritization." In this approach, concepts and principles are the objectives of a given course. The concepts are introduced early in a given discussion, and detailed, factual information is limited to that which effectively serves to establish and illustrate each concept. Sequential prioritization involves a careful determination of those courses of study that are fundamental to others arranged in a logical, progressive sequence. In developing sequential prioritization, curriculum designers must hue to reasonable student loads that will lead to students' mastery of basic concepts at a level that will ensure their future resourcefulness in continued learning.

It is agreed that independent learning and the development of resourcefulness are very important in medical education. In the early years of medical school the basic sciences should foster these capabilities by less reliance on factual information not specifically related to fundamental concepts or to essential scientific language development.

Educational programs based on students being independent, problem-solving learners will increase faculty involvement with students, and the time devoted to teaching and learning by both faculty members and

students will increase commensurately. Although training faculty members to guide students in independent learning may be difficult and costly initially, long-term costs are unlikely to exceed those of a conventional lecture-based program. New, sophisticated evaluation mechanisms must be established to augment faculty members' judgments of students' analytical skills.

This conclusion will likely be best effected by teaching fewer courses simultaneously, exploring them more deeply, and targeting them toward conceptual understanding.

COMMENTARY ON CONCLUSION 4

The recommendations of this conclusion relate largely to the clinical clerkship years. They call for more accurate specification of the clinical knowledge, skills, and values that are required; the adaptation to new clinical settings; the need for faculty guidance and supervision of students during clerkships; the evaluation of students according to specific prescribed criteria; a better integration of basic science and clinical education; and the need for an emphasis, during the clinical years, on general preparation rather than following procedures deemed necessary to gain a specialty residency. The working group agrees generally with the articulation of the problems and goals that need to be anticipated in a changing clinical environment: solutions are difficult, not readily apparent, and need continuous assessment.

The full four years available for medical study prior to award of the M.D. degree should be dedicated primarily to a broad and thorough general preparation emphasizing the aspects outlined in GPEP and in this commentary. Too early and too intensive a concentration on a specialty is detrimental to an orderly and reasonable pursuit of that process. The timing and the process of resident selection should not encroach on the effective utilization of all four years of students' general preparation.

The working group recommends that those in medical schools responsible for the educational merit of students' elective programs develop and use explicit criteria for the senior year programs so that students accomplish their general professional education and are protected from the intrusiveness of the recruiting practices of residency program directors.

COMMENTARY ON CONCLUSION 5

The recommendations of this conclusion are aimed at enhancing faculty dedication to and involvement with the educational functions of each medical school. They encourage a better educational organization, a defined budget for education, the establishment of a mentor function between faculty and students, less highly specialized teaching roles, and a high degree of recognition and reward for effective teaching. This conclusion is perceived to contain many laudable goals whose achievement will require overcoming serious obstacles inherent in past and present practices of the academic environment.

The working group recognizes that a real impediment to educational development in many medical schools has been a lack of direction, focus, and, above all, leadership in curricular design and execution. The group believes that medical school deans and departmental chairmen must provide leadership for the educational functions of their schools and set a tone to ensure that the direction and proper design of programs of medical student education are high priorities. To foster this goal, the group believes it is desirable that the major committee concerned with educational policy and goals be composed of departmental chairmen who are charged with the responsibility for the overall design and coordination of the curriculum. Detailed scheduling and implementing of the curricular function can be accomplished by interdisciplinary committees and individual faculty members operating in a coordinated and up-to-date fashion.

Deans and departmental chairmen should also provide visibility, reward, and advancement to outstanding faculty members who are characterized by carrying innovative and effective leadership responsibilities in the teaching of either basic science or clinical science while at the same time maintaining productive programs of quality research. The working group makes this recommendation fully recognizing that, in most medical school settings, quality teaching requires firsthand experience with the frontiers of research and/or expanding innovative avenues of health care delivery.

All faculty members who teach medical students must be engaged in scholarly endeavors that are intellectually challenging. Within each medical school, some faculty members will be more involved with medical students than others. Faculty members who carry major responsibility for the curricular functions of a school should not be exempt from other scholarly requirements. However, they will often be forced to absorb some sacrifice in the quantity or rate of their research contributions due to competitive pressures on their professional time. They must not sacrifice the quality of their scholarly contributions. In view of the difficulty such members may encounter in acquiring support for excellent, but modest, research activities, institutions and foundations should be encouraged to develop mechanisms to assist them.

The working group acknowledges that identifying a specific budget for the education of medical students may seem to emphasize the reward for teaching. It believes, however, that defining a budget for the entire cost of the educational program is not practical.

The working group agrees that closer relationships between faculty members and students are desirable and that faculties should be encouraged to serve as mentors by working with students in small groups. How much faculties should be expected to encompass in this role, both within and beyond their disciplines, must be resolved. Faculties must know also how their contributions fit within the overall educational plan of their institutions.

CONCLUSION

The GPEP report is stimulating medical school faculties to reconsider the educational concepts and principles upon which medical students' education has been based during this century. The panel grounded its conclusions and recommendations on two major assumptions. First, biomedical knowledge relevant to the care of patients will continue to expand rapidly. Second, the nation's health care system will change toward medical services being provided by large organizations. To prepare physicians who will practice under different and more complex conditions in the twenty-first century will require more than minor tinkering. We have provided this commentary to assist and encourage deans and faculties to reorient their educational programs in a direction that will be consistent with the demands that physicians will face in the future.

NATIONAL BOARD OF MEDICAL EXAMINERS' CHANGE TO COMPREHENSIVE PART I AND PART II EXAMINATIONS

At its annual meeting in March 1985, the National Board of Medical Examiners voted to proceed with the implementation of changes in the Part I and Part II examinations recommended by a study committee.

The committee recommended that the examinations should reflect the scientific principles, basic medical knowledge, and problem-solving skills students should have acquired for subsequent educational experiences in the continuum of medical education and further learning as a physician. The study committee recommended that the term "comprehensive" should be used to describe the examinations.

The NBME has authorized the inclusion of the committee report that follows in the Council agenda.

RECOMMENDATION:

That the Council of Academic Societies consider the effect of the changes in the Part I and Part II examinations on the education of medical students.

Use of National Board of Medical Examiners' Certification Examinations in 127 U.S. Medical Schools, 1983-84

Use by Schools	Part I Examination		Part II Examination	
	No.	Percent	No.	Percent
Optional	29	22.8	36	28.4
Student must record score	35	27.6	41	32.3
Student must record passing total score	59	46.5	—	—
Student must record passing score in each section	3	2.4	—	—
Student must record passing score to graduate	—	—	48	37.8
To determine final course grades	18	14.2	16	12.6

SOURCE: *1983-84 AAMC Curriculum Directory.*

Report of the Study Committee to Review Part I and Part II

The Study Committee to Review Part I and Part II was appointed and charged by C. William Daeschner, Jr., M.D., Chairman of the Board, in the Fall of 1983; Robert L. Volle, Ph.D., accepted appointment as Chairman. Nominations for membership were solicited from the full Board, and selection of members followed the guidelines recommended by the full Board at the March 1983 meeting. A list of the membership of the Committee and the charge are included on pages 9-11.

The full Study Committee has met four times, in November 1983, and in February, June, and October of 1984. At the recommendation of the Committee, a subcommittee was appointed by Dr. Volle to explore certain topics in depth and report to the full Committee at subsequent meetings. This subcommittee had two meetings (January and April, 1984).

Background Information Provided to the Study Committee

The Study Committee received extensive background material as it began its deliberations. These materials included information on the historical evolution of the organization of the content of the Part I and Part II examinations, the use of the examinations over time by licensing bodies and schools of medicine, the final draft and subsequently the final report of the AAMC-GPEP committee, as well as concerns expressed about specific content and the overall quality of the exams during the last five years. Additionally, a complete overview of the current roles and responsibilities of the test committees and chairmen was provided. The Committee was given a comprehensive briefing on the current process of test design, item development, scoring, analysis, standard setting, and reporting of examination results. They were also offered the opportunity to review the most recent Part I and Part II examinations.

Study Committee Discussions

The Study Committee agreed, considering their charge, that their purpose was to make recommendations to improve the design of the Part I and Part II examinations so that they better serve the needs of the academic community and the licensing bodies. The committee concluded that a "comprehensive" examination design, one that encompasses more than the current six or seven academic disciplines, would best meet the goals of the National Board. The reasons for this conclusion were:

> The committee agreed that the design of the Comprehensive Part I and II examinations should reflect the scientific principles and basic medical knowledge that a student should understand for subsequent educational experiences in the continuum of medical education, and for further learning as a physician.

The Committee agreed that, based on the information available, it would be desirable to build more flexibility into the design of the examinations to respond more readily to the changing world of medicine, both in relation to content per se and the level of sophistication of the reasoning and analytic skills required of student physicians assessed by the examinations. These examinations should contain a certain number of items that assess new content domains not covered in the subjects currently on Parts I and II.

Students must be able to demonstrate the ability to apply knowledge and process information in a problem-solving manner. The examinations should test a candidate's knowledge at higher cognitive levels; to demonstrate this ability, the NBME must attempt to increase the proportion of questions that test higher reasoning skills.

The committee agreed that the current testing time for Parts I and II (2 days each) should not be expanded. If a large number of test items that focus on reasoning skills is included in the examinations, students would have difficulty completing 900 items in the allotted time. Therefore, the committee recommended that the total number of items in the examinations be reduced so that committees could write more searching, higher cognitive level items that require application, analysis and synthesis skills.

With regard to the criteria for determining the weight of current and new content areas, the Study Committee agreed that the essence of the design of the new comprehensive examinations should be flexibility to permit continuous reappraisal of the specifications in light of revision in emphasis of various scientific areas. The organization of the comprehensives should facilitate multidimensional content specifications. While each current subject should be allocated a minimum number of items, all subjects would not be allotted an equal number of items.

The committee readily concurred that subject examinations, currently provided from the most recent administration of the Part examinations, are an important service to the medical schools. They agreed that their use as academic achievement examinations could be improved by allowing them to be developed relatively independently of the comprehensive examinations. The current discipline committees should be free to define the specifications, including the number of items, for these examinations. These examinations would contain test material from the comprehensive examinations as well as test items developed exclusively for the subject examination.

The historical background of the methodology by which the current Parts I and II performance standards are set was reviewed. After considerable discussion, the Study Committee felt that it was difficult to derive a totally acceptable rationale for changing the current standard-setting practices. The Study Committee suggested that further discussion of this issue await the development of the new comprehensive examinations at which time it would be germane to open the question again.

The issues related to the reporting of student scores and the cognitive level of the examinations referred to in the AAMC-GPEP report are positively addressed in the Study Committee's specific recommendations regarding the comprehensive examinations.

In light of all of its deliberations, the Study Committee at its meeting on October 5-6, 1984 adopted the proposal that Parts I and II be designed and developed as "comprehensive" examinations. The proposal which follows on pages 4-7 includes the committee's recommendations concerning the characteristics of the comprehensive examinations, the role and composition of the proposed Comprehensive Committees, and the process for examination development and score reporting. Based upon this concept of comprehensive examinations, the committee recognized that it would no longer be possible to derive subject examinations in Parts I and II as has been done in the past. To meet the continued interests and needs of medical schools for such evaluation services, the Study Committee adopted a proposal related to the continued provision of subject examinations by the NBME, which is detailed on page 8.

Proposal re: Part I and Part II Comprehensive Examinations

Preamble:

Within the limits of that which is measurable by written examinations, the National Board of Medical Examiners should strive to create, and describe the specifications for, an evaluation system that will have the following characteristics:

I. Characteristics of the Comprehensive Examinations

A. Content specifications for the Comprehensive Part I and Part II examinations should reflect the scientific principles, basic medical knowledge, and problem-solving skills students should have acquired for subsequent educational experiences in the continuum of medical education and further learning as a physician.

B. For each Comprehensive Part, detailed multidimensional content specifications, including new content domains, would be developed. These content specifications would not be simply the sum of the current subject outlines.

C. Criteria for inclusion of new content domains should be defined and specific content specifications developed for each new area. Some new areas may be incorporated into current subject committee content specifications; others may be assigned to special task forces for content development.

D. In order to allow time for more items that test reasoning skills, the total number of items in the Comprehensive Parts should be reduced from that which is currently administered.

E. The total number of test items, total testing time and the relative weights for current subjects would be developed for each Comprehensive Part. Each of the current subjects would have a certain minimum number of items.

II. Role and Composition of the Comprehensive Committee

A. A Comprehensive Committee would be established for each Part and would have responsibility for:

(1) definition of the content specifications for the respective "Comprehensive;"

(2) review and approval of the "Comprehensives" constructed from the blocks of test material generated by the various test material development groups (subject committees and task forces); and

(3) constructive feedback to these groups regarding the quality, quantity, and specifications of test material required. The detailed examination specifications to be defined by the Comprehensive Committees would include:

1. Overall multidimensional content specifications for each Comprehensive Part;

2. Designation of multidisciplinary areas for review;

3. New content areas to be included;

4. Total number of items on each Comprehensive Part;

5. Number of items for each content area; and

6. Recommended percentages for higher cognitive level items.

B. Each Comprehensive Part I and Part II committee would consist of 8-10 persons including individuals from some of the subject committees, the alternate Part Comprehensive Committee, and from fields germane to each Comprehensive Part examination.

III. Process for Developing Comprehensive Part Examinations (See chart on page 7)

A. The Comprehensive Committee for each Part would assign content specifications to subject committees. Subject committees would use specifications for subjects, as they currently exist, in conjunction with multidimensional comprehensive specifications to develop items for the Comprehensive examinations.

B. The Comprehensive Committees would designate special task forces to develop content specifications for multidisciplinary subjects and new content areas.

Task Forces for multidisciplinary topics would review several examinations from previous years to ascertain how well the topic is covered by current subjects. They would develop recommendations for additional items and designate which current committee, if any, may be able to provide the items.

Task Forces dealing with new content areas would develop content specifications for each new domain consistent with instructions received from the Comprehensive Committee. They would also develop test material according to these specifications which would be appropriate for inclusion in the Comprehensive Part examination.

C. Chairs of the subject test committees and special task forces would meet to review items to be submitted to the respective Comprehensive Committee. At this time they would also validate the cognitive level classification of the items.

D. Comprehensive Committees would approve final drafts of Parts I and II examinations for compliance with specifications and internal integration. The Comprehensive Committee will not rewrite or revise test items that have been approved by the subject committees and task forces.

E. Comprehensive Committees would provide feedback to subject committees and task forces regarding the degree to which the specifications were met.

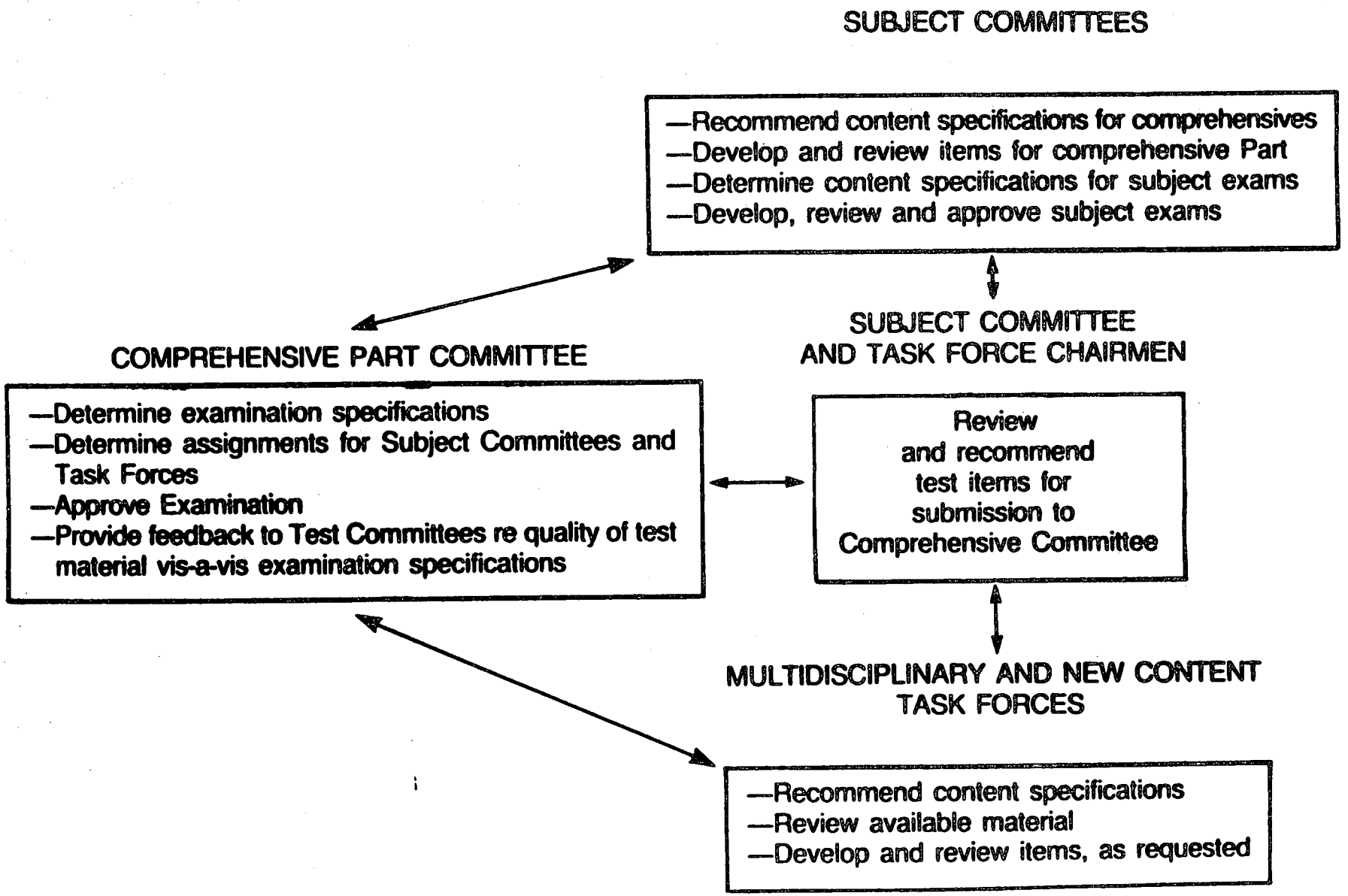
IV. Reporting and Feedback Systems

A. Medical schools would receive the Comprehensive Part total score for each student, group mean scores for current subjects and other content areas, and, if requested, item analysis data with keyword phrases for each item.

B. Students would receive an overall score for the Comprehensive Part and a designation of Pass or Fail. No subject scores would be provided for individual students.

To assist students in identifying areas of academic deficiency, keyword phrase feedback for test items answered incorrectly would be provided to students on request. Mechanisms would be developed to provide keyword reports to failing students automatically.

COMMITTEE ROLES AND RELATIONSHIPS



Proposal Regarding Subject Examinations

The Study Committee recognized the importance of NBME subject examinations as academic achievement tests, and further that the implementation of Comprehensive Part I and Part II examinations would preclude subject examinations derived wholly from the Part examinations.

They agreed that a new plan for subject examinations should be developed that would be directly focused on the needs of medical schools for assessing academic achievement.

These examinations would allow the subject committee more flexibility to define content specification related to the depth and breadth of the medical curriculum. They would require fewer constraints on the number of items, would provide additional feedback benefits, and would maintain national standards for comparison.

Characteristics of the subject examinations would include:

A. Subject committees would have responsibility for, and authority to determine, the content specifications and length of subject exams used for "intramural" evaluation purposes by medical schools.

B. Subject examinations would contain test material that has been included in the Comprehensive Part exam as well as material that has not been included in the Comprehensive Part.

C. Schools would receive group mean scores for subject examinations as well as individual student scores. Schools could request keyword phrase feedback reports for students taking subject exams. Item analysis reports would be available to schools on request.

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AAMC POSITION ON FINANCING GRADUATE MEDICAL EDUCATION

I. Administration's Proposal

Because the Administration's budgetary proposals would cause serious financing problems for teaching hospitals,

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES IS STRONGLY OPPOSED TO THE ADMINISTRATION'S PROPOSED PERMANENT CAP ON THE MEDICARE COST REIMBURSEMENT OF A HOSPITAL'S MEDICAL EDUCATION EXPENSES.

II. The Dole-Durenberger-Bentson Proposal

A. Hospitals face the inflation present in the national economy as a whole. Therefore, the AAMC recommends

THAT S.1158 BE AMENDED TO PROVIDE THAT THE MEDICARE PASSTHROUGH FOR MEDICAL EDUCATION COSTS BE INCREASED BY THE SAME PERCENTAGE USED TO INCREASE THE FEDERAL COMPONENT OF THE DRG PRICES.

B. In recognition of the fact that the initial skills and techniques needed by different specialties require different lengths of training, the AAMC believes

SUPPORT THROUGH INITIAL BOARD ELIGIBILITY IS AN ESSENTIAL MINIMUM TRAINING PERIOD THAT EVERY PATIENT SERVICE PAYER SHOULD HELP FINANCE.

C. If Part A payment is to be limited to the initial eligibility required to produce a competent practioner, the AAMC recommends

AMENDING S.1158 TO ALLOW PART B BILLS TO BE RENDERED FOR PHYSICIAN SERVICES PROVIDED BY INDIVIDUALS IN RESIDENCY YEARS WHICH MAY NOT BE INCLUDED IN A HOSPITAL'S COSTS.

E. The AAMC believes society has a responsibility to provide necessary clinical training for physicians from U.S. schools, and recommends

AMENDING SECTION (P)(iii) TO ELIMINATE MEDICARE SUPPORT FOR ALL RESIDENTS WHO ARE NOT GRADUATES OF ACCREDITED MEDICAL (OR OSTEOPATHIC) SCHOOLS LOCATED IN THE U.S. OR CANADA.

F. Because abrupt elimination of foreign medical graduates would cause substantial access and service problems for Medicare beneficiaries, the AAMC recommends

THAT S.1158 BE AMENDED TO PROVIDE A THREE YEAR PHASE-OUT FOR MEDICARE SUPPORT OF RESIDENTS GRADUATING FROM FOREIGN MEDICAL SCHOOLS.