AGENDA

FOR

COUNCIL OF ACADEMIC SOCIETIES

Interim Meeting
February 26-27, 1981
Washington Hilton Hotel
Washington, D.C.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

One Dupont Circle

Washington, D.C. 20036

1981 CAS INTERIM MEETING
February 26-27, 1981
Washington Hilton Hotel
Washington, DC

Background materials for the discussion group sessions were mailed to all CAS Representatives two weeks prior to the meeting date. Extra copies are available at the Registration Desk.

MEETING SCHEDULE

Thursday, February 26

9:00 a.m. — Registration (outside International Ballrooms)

10:00 a.m. — Introductory Remarks (International Ballroom West)

John A. D. Cooper, M.D., Ph.D. - President, AAMC
Daniel X. Freedman, M.D. - CAS Chairman

Plenary Session

Evolution of the Examination Process for Medical Licensure - the FLEX I-II Plan

Bryant L. Galusha, M.D.
President-Elect, Federation of State Medical Boards
Director of Medical Education
Charlotte Memorial Hospital
Charlotte, North Carolina

Principles Underlying the Conceptualization of the Comprehensive Qualifying Examination, its Design Specifications and Preliminary Results of the Field Test

C. William Daeschner, Jr., M.D.
Chairman, NBME Steering Committee for the Comprehensive Qualifying Evaluation Program
Chairman, Department of Pediatrics
University of Texas, Galveston

The Role of the Basic Sciences in Assessing Readiness to Assume Responsibilities for Patient Care: the Scientific and Philosophic Underpinnings

Jack D. Myers, M.D.
Consultant on Basic Science Problem Solving, NBME
University Professor of Medicine
University of Pittsburgh School of Medicine

A Methodology for the Development of Test Items Integrating the Basic and Clinical Sciences and Examples of Initial Efforts

Roy C. Swan, M.D.
Chairman, NBME Task Force on Basic Sciences for the Comprehensive Qualifying Examination
Hinsey Professor of Anatomy
Cornell University Medical College

12:30 p.m. — Luncheon (Monroe West Room)

1:30 p.m. — Reconvene (International Ballroom West)

Presentation and Discussion of Competency Criteria Statements

Bryce Templeton, M.D.
Project Director, Comprehensive Qualifying Evaluation Program - National Board of Medical Examiners

AAMC Clinical Evaluation Project: Implications for Assessment at the Interface

Xenia Tonesk, Ph.D.
Program Director, Personal Characteristics and Skills Assessment
Association of American Medical Colleges

2:30 p.m. — Small Group Discussion Sessions (assigned at registration)

CAS Representatives in groups of 15 will have the opportunity to examine a sample of the questions which will be in the Comprehensive Qualifying Examination and to comment on the proposals.

5:30 p.m. — Recess

6:00 p.m. — Cocktails (Hemisphere Room)

Friday, February 27 — Plenary Session (International Ballroom West)

8:30 a.m. — Discussion of FLEX I-II Proposal and the Comprehensive Qualifying Examination

10:00 a.m. — Coffee Break

10:30 a.m. — Business Meeting

Presentation Regarding Current and Upcoming Issues of Importance to the Academic Societies with special attention to:

The New Congress:

Legislative and Budgetary Trends
An Overview of Committee and Staff Changes

12:30 p.m. — Adjournment

CAS REPRESENTATIVES AND PUBLIC AFFAIRS REPRESENTATIVES

BASIC SCIENCES

ANATOMY
American Association of Anatomists
Dr. Berta V. Scharrer
Dr. Carmine D. Clemente
Dr. John E. Pauly (PAR)
Association of Anatomy Chairmen
Dr. Gordon Kaye
Dr. Douglas Kelly (PAR & Rep)

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Evan G. Pattishall, Jr., M.D. (PAR & Rep)

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Dr. Mary Ellen Jones
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Dr. Gerhard W. E. Plaut
Dr. Robert Hill
Dr. Lowell P. Hager (PAR)

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Kenneth I. Berns, M.D., Ph.D. (PAR)

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Society for Neuroscience
Dr. David H. Cohen (PAR & Rep)

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Arthur Hull Hayes, Jr., M.D. (PAR & Rep)
Amer. Soc. for Pharm. & Experimental Therapeutics
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Dr. James M. Fujimoto
Dr. Lowell M. Greenbaum (PAR)
Assoc. for Medical School Pharmacology
Joseph R. Bianchine, M.D.
Lowell M. Greenbaum, Ph.D. (PAR & Rep)

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American Physiological Society
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Robert M. Berne, M.D.
Brian Curtis, Ph.D. (PAR)
Assoc. of Chairmen of Depts. of Physiology
Dr. H. Maurice Goodman
Dr. William F. Ganong (PAR & Rep)

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Joseph H. Keffer, M.D.
Deanna Duby (PAR)
Association of Pathology Chairmen, Inc.
Werner H. Kirsten, M.D.
Robert W. Prichard, M.D.
Rolla B. Hill, M.D. (PAR)
Academy of Clin. Lab. Physicians & Scientists
David M. Brown, M.D. (PAR & Rep)
Society for Health and Human Values
Larry R. Churchill, Ph.D.
Andrew D. Hunt, Jr., M.D.
Jo Ivey Boufford, M.D. (PAR)

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MEDICAL DISCIPLINES

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Paul Vanarsdel, M.D.
Norman Isaacs, M.D. (PAR)

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E. Dorinda Shelley, M.D.
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Endocrine Society
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Virginia V. Weldon, M.D.
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Thomas A. Nicholas, M.D. (PAR)
Society of Teachers of Family Medicine
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Frank C. Snope, M.D.
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Atis Freimanis, M.D.
A. Everette James, Jr., M.D. (PAR)

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Sharon VanderWeide, M.Ed.
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Comprehensive Qualifying Evaluation
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Fort Worth, Texas

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Chairman, Department of General Surgery
Stanford University
School of Medicine
Stanford, California

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Department of Academic Affairs

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Division of Student Programs

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Department of Academic Affairs

Xenia Tonesk, Ph.D.
Program Director, Personal Characteristics and Skills Assessment

Kat Turner
Special Assistant to the President

Marjorie P. Wilson, M.D.
Director
Department of Institutional Development

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Philadelphia, Pennsylvania

Louis van de Beek
Medical Student, Hahnemann Medical College
Philadelphia, Pennsylvania

* Attending the CAS Interim Meeting

** CAS Interim Meeting Discussion Group Leader

FUTURE CAS MEETING DATES

AAMC ANNUAL MEETINGS

October 31 - November 5, 1981
(Tentative dates for the CAS Meetings, November 1-2)

November 6-11, 1982
(Tentative dates for the CAS Meetings, November 7-8)

November 5-10, 1983
(Tentative dates for the CAS Meetings, November 6-7)

Notification of the dates of Interim Meetings will be mailed out immediately following each Annual Meeting.

CAS INTERIM MEETING

SOME ISSUES TO BE CONSIDERED

CAS representatives will have a unique opportunity to appraise the proposal by the Federation of State Medical Baords to establish a single route to medical licensure and the Comprehensive Qualifying Examination being developed by the National Board of Medical Examiners. It is planned as one of the examinations in the Federation proposal. Some of the issues that should be considered in your appraisal are set forth below.

1. The concept of a single route to medical licensure is based on the conviction that all individuals who pass the same examination will have met a common standard and are equally prepared to practice medicine.

   a. Are there standards that students in accredited U.S. medical schools must meet prior to graduation that are not required of students graduating from many foreign schools?

   b. Will the method of a single examination for all who seek to be licensed ensure that all who are licensed to practice have met standards equivalent to those established by U.S. medical school faculties?

   c. Should there be a different method for ensuring that graduates of foreign schools have met a standard equivalent to that imposed on domestic students who are awarded the M.D. degree?

   d. Will any written examination in the foreseeable future substitute for the direct observation of students' performance by experienced faculty?

2. The proposal to require passing an examination to enter graduate medical education and participate in the care of patients under supervision is based on the conviction that the public must be protected from residents who lack the competencies needed to participate in graduate medical education programs.

   a. Will the FLEX I examination protect the public or,

   b. Should the Accreditation Council for Graduate Medical Education and Residency Review Committees' efforts to disaccredit inadequate programs with poor supervision be the mechanism for ensuring that residents are not permitted to assume responsibility beyond their competency?

3. The faculties of U.S. medical schools have worked closely with the National Board of Medical Examiners, and over the years have evolved a sequence of three examinations that are taken by 85% of U.S. students for the purpose of certification for licensure. Many medical faculties also believe that the Parts I and II examinations are useful to evaluate their students' progress.

a. As judged by the sample of items made available for inspection at this meeting, will the Comprehensive Qualifying Examination, as described, be equivalent in utility to Parts I and II for most faculties?

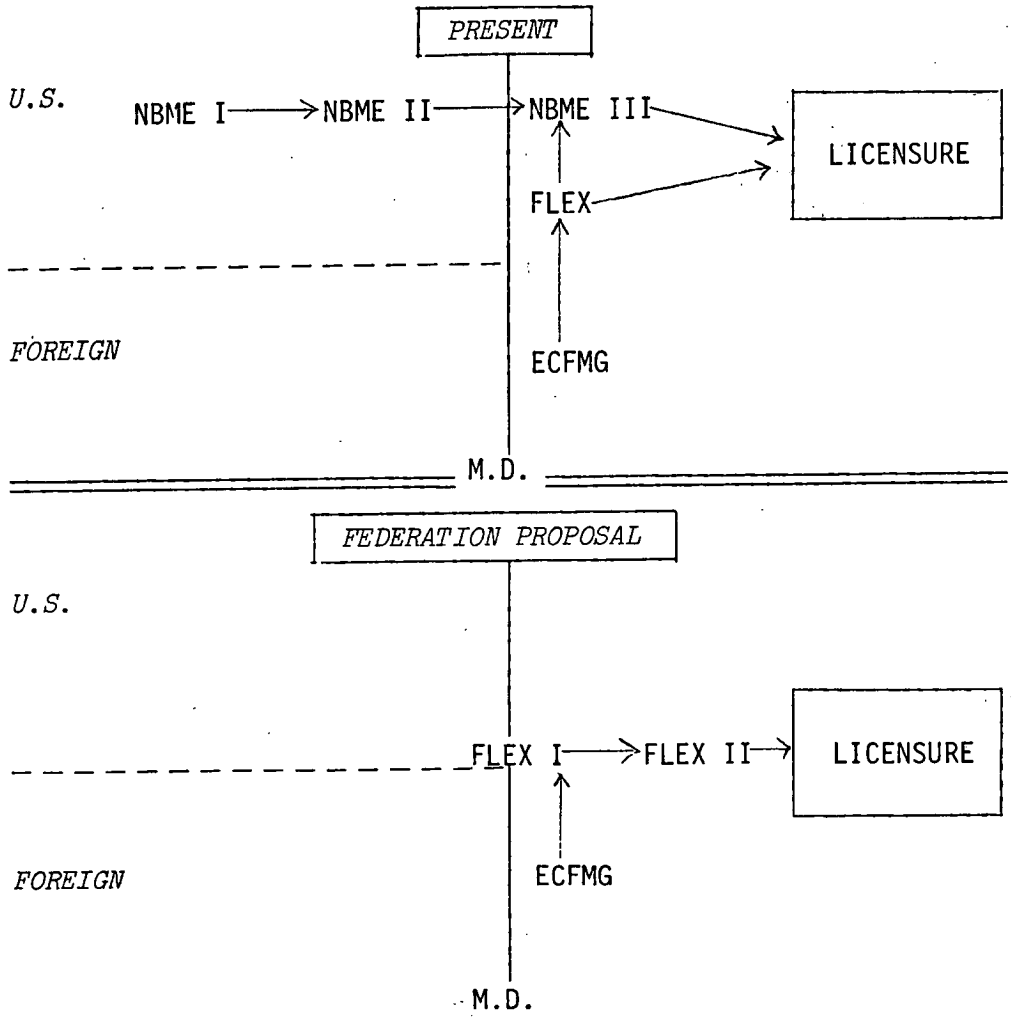
b. Can U.S. medical faculties, working with the NBME, further improve the Board's certification examination sequence?

4. Presently, students have the option of gaining a license by achieving a National Board of Medical Examiners diploma or by passing the Federation Licensing Examination. Faculties have the option of whether or not they will use the National Board sequence for student evaluation.

a. Will the requirement that the FLEX I examination be passed to enter graduate medical education, that the FMEX II examination be passed to achieve an unrestricted license and withdrawal of recognition of the National Board's diploma for licensure limit faculty options and impose constraints on curricula?

b. Should the Association continue to hold to its position that passage of Parts I and II of the National Board examination be accepted as an equivalent qualification (see response 3 of attached)?

EXAMINATION ROUTES TO LICENSURE



Installation of the Chairman

Dr. Mellinkoff presented the gavel to Dr. Leonard W. Cronkhite, Jr., the new AAMC chairman. In accepting, Dr. Cronkhite expressed the Association's appreciation and thanks for Dr. Mellinkoff's dedicated leadership and sense of humor during his year as chairman.

Adjournment

The Assembly was adjourned at 4:05 p.m.

Addendum

Response of the AAMC to the Principal Recommendations of the Goals and Priorities Committee Report to the National Board of Medical Examiners

The Association of American Medical Colleges has long been engaged in furthering the improvement of medical education in the United States. Through direct services to its constituents, interactions with other organizations and agencies concerned with medical education, national and regional meetings and participation in the accreditation of medical schools, the Association has exercised its responsibilities to the schools, teaching hospitals, and to the public which is served by its medical education constituency. From time to time, the Association has analyzed and responded to reports bearing on medical education emanating from other organizations and agencies. This is a response to the National Board of Medical Examiners' Goals and Priorities (GAP) Committee report entitled, "Evaluation in the Continuum of Medical Education."

The responses recommended in this document are a consensus derived from a task force report which provided the basis for extensive discussion and debate by the Councils, the Organization of Student Representatives, and the Group on Medical Education. The consensus was achieved through deliberation by the Executive Council and is now presented to the Assembly for ratification.

On the assumption that the report of the Goals and Priorities Committee, "Evaluation in the Continuum of Medical Education," has been widely read, an extensive review and analysis is not provided here. The report recommends that the NBME reorder its examination system. It advises that the board should abandon its traditional three-part exam for certification of newly graduated physicians who have completed one year of training beyond the M.D. degree. Instead, the board is advised to develop a single exam to be given at the interface between undergraduate and graduate education. The GAP Committee calls this exam "Qualifying A," and suggests that it evaluate general medical competence and certify graduating medical students for limited licensure to practice in a supervised setting. The committee further recommends that the NBME should expand its role in the evaluation of students during their graduate education by providing more research and development and testing services to specialty boards and graduate medical education faculties. Finally, the GAP Committee recommends that full certification for licensure as an independent practitioner be based upon an exam designated as "Qualifying B." This exam would be the certifying exam for a specialty. In addition, the GAP Report recommends that the NBME: (*a*) assist individual medical schools in improving their capabilities for intramural assessment of their students; (*b*) develop methods for evaluating continuing competence of practicing physicians; and, (*c*) develop evaluation procedures to assess the competence of "new health practitioners."

Responses

1. The AAMC believes that the three-part examination system of the National Board of Medical Examiners should not be abandoned until a suitable examination has been developed to take its place and has been assessed for its usefulness in examining medical school students and graduates in both the basic and clinical science aspects of medical education.

2. The AAMC recommends that the National Board of Medical Examiners should continue to make available examination materials in the disciplines of medicine now covered in Parts I and II of the National Board exams, and further recommends that faculties be encouraged to use these materials as aids in the evaluation of curricula and instructional programs as well as in the evaluation of student achievement.

3. The AAMC favors the formation of a qualifying exam, the passing of which will be a necessary, but not necessarily sufficient, qualification for entrance into graduate medical education programs.

Passage of Parts I and II of the National Board examination should be accepted as an equivalent qualification.

The following recommendations pertain to the characteristics and the utilization of the proposed qualifying exam: (*a*) The exam should be sufficiently rigorous so that the basic science knowledge and concepts of students are assessed. (*b*) The exam should place an emphasis on evaluating students' ability to solve clinical problems as well as assessing students' level of knowledge in clinical areas. (*c*) The exam should be criterion-referenced rather than norm-referenced. (*d*) Test results should be reported to the students taking the exam, to the graduate programs designated by such students, and to the schools providing undergraduate medical education for such students. Item analyses and other aggregate data should be made available to institutions desiring to assess their curricula and educational programs. (*e*) The exam should be administered early enough in the students' final year that the results can be transmitted to the program directors without interference with the National Intern and Resident Matching Program. (*f*) Students failing the exam should be responsible for seeking additional education and study, and medical schools should be encouraged to provide the additional academic assistance if students so request. (*g*) Graduates of both domestic and foreign schools should be required to pass the exam as a prerequisite for entrance into accredited programs of graduate medical education in the United States.

4. The AAMC doubts that medical licensure bodies in all jurisdictions will establish a category of licensure limited to practice in a supervised education setting. Therefore, the AAMC recommends that the Liaison Committee on Graduate Medical Education should require that all students entering accredited graduate medical education programs pass the qualifying exam. The LCGME is viewed as the appropriate agency to implement the requirement for such an exam.

5. The AAMC should assume leadership in assisting schools to develop more effective student evaluation methodologies and recommends that the Liaison Committee on Medical Education place a specific emphasis on investigating schools' student evaluation methods in its accreditation surveys.

6. The AAMC recommends that the LCGME and its parent bodies take leadership in assisting graduate faculties to develop sound methods for evaluating their residents, that each such faculty assume responsibility for periodic evaluation of its residents, and that the specialty boards require evidence that the program directors have employed sound evaluation methods to determine that their residents are ready to be candidates for board exams.

7. The AAMC recommends that physicians should be eligible for full licensure only after the satisfactory completion of the core portion of a graduate medical educational program.

NATIONAL BOARD OF MEDICAL EXAMINERS
3930 CHESTNUT STREET, PHILADELPHIA, PA. 19104

BACKGROUND DOCUMENTS

REGARDING

THE COMPREHENSIVE QUALIFYING EVALUATION PROGRAM:

ITS ORIGINS, EVOLUTION, AND DESIGN CHARACTERISTICS

PREPARED BY THE
NATIONAL BOARD OF MEDICAL EXAMINERS

FOR THE INTERIM MEETING
OF THE
AAMC COUNCIL OF ACADEMIC SOCIETIES
WASHINGTON, D.C.
FEBRUARY 26-27, 1981

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An Approach to the Definition of Medical Competencies Required For the Assumption of Patient Care Responsibilities*

*DRAFT Competency Document
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CHAPTER I. INTRODUCTION

Origin, Evolution, and Principles of the Comprehensive Qualifying Evaluation Program

The past several decades have witnessed multiple changes in medical education and practice. Many of the changes in medical education have been directly related to the voluminous increment in knowledge of the medical sciences and disease. This has been a determining factor in prolonging the formal education of a physician by practically mandating a period of graduate medical education following receipt of the M.D. degree. Specialization in the practice of medicine has become a goal of almost all medical graduates. These two phenomena have had a significant impact upon medical schools, teaching hospitals, specialty societies and boards, national professional organizations, and various segments of the federal government. They, in turn, have had an obvious influence upon the structure and conduct of medical education and the accreditation process.

The evolutionary changes that have occurred in medical education have prompted multiple organizations to review the milestones in the educational continuum and to identify those which require evaluation in order to determine the individual's readiness to proceed in the educational process or to accept new and changing responsibilities. Some of these milestones include promotion from one class in medical school to another, assuming clinical responsibilities in medical school, graduating from medical school, accepting responsibility for the care of patients under supervision, completing residency training, obtaining a license to practice medicine independently, becoming certified by a specialty board, and obtaining privileges to practice in a hospital.

As a result of the changes in a physician's educational itinerary, certain milestones no longer have the same significance or meet the needs they once did. At one time, the M.D. degree symbolized the completion of the formal education of a physician and his readiness to practice medicine independently. It now represents the completion of only the first phase of formal education and readiness to pursue further education.

Today's medical licensing system evolved during the early decades of this century. A license to practice independently was provided following graduation from medical school or following one year of graduate medical education. The same system still exists despite the three to seven years of residency that practically all graduates experience. Thus, many graduate physicians in residencies are providing significant amounts of patient care without legal sanction by the licensing authorities.

Concerns about the disparity between the milestones of increased responsibility and the system of evaluation have recently led the Federation of State Medical Boards to review its obligation to assess the capabilities of graduating medical students to assume responsibility for the care of patients in a graduate medical education setting.

In 1971, the Goals and Priorities (GAP) Committee of the National Board of Medical Examiners (NBME) undertook a study to determine how the NBME could prepare itself to provide evaluation services which would respond to the changing needs of medical education and licensure. The NBME acted upon several recommendations from the GAP Committee which have had an impact upon the structure and function of the Board. Among them was a concept that is still in the process of development: "The NBME in cooperation with the Federation of State Medical Boards should develop an examination to evaluate performance characteristics requisite for providing patient care in a supervised setting. The examination should be administered at or near the end of undergraduate medical education."

The principles and premises upon which this recommendation was developed consisted of the following:

(1) The National Board of Medical Examiners (NBME) was established in 1915 to provide high quality examinations for licensing purposes, and for forty years thereafter provided examinations leading only to certification and licensure. The Board performed this function through the willingness and devotion of academicians who developed the questions and evaluated the essay responses as part of their professional commitment to evaluating the quality of the licensing process.

(2) From 1954 to the present time, the use of multiple-choice questions in the National Board examinations, again created by members of the faculties of the schools of medicine, provided test results to medical schools that were useful in the aggregate for comparison with a national external standard, and for the individual student as a measure of educational achievement in the disciplines being tested.

(3) Although the examinations continued to be used for certification and licensure, it became apparent that they were becoming de facto measures of educational achievement and did not have as their primary objective the evaluation of an individual's capability to care for patients, which is the primary purpose of licensure.

(4) This dual use of a single examination was not consistent with a fundamental principle of evaluation, namely, that examinations should be designed in relation to the specific purpose they are intended to serve.

    (a) The purpose of licensure is to provide the public with assurance that individuals delivering health care have acquired the educational qualifications and requisite knowledge, understanding, and problem-solving ability to do so safely and effectively.

(b) The purpose of evaluation for educational achievement is to provide faculties with assurance at multiple points along the educational continuum that students are making acceptable progress in acquiring the knowledge, understanding, and skills needed to move to advanced levels of the curriculum.

(5) It was against this background that the Goals and Priorities Committee of the NBME, in its report of June 1973, recommended that evaluation for licensure be unlinked or separated from evaluation for the assessment of educational achievement. Additionally, the GAP Committee, mindful of the declaration of the LCME that completion of medical school did not prepare the physician for independent practice, recommended that a comprehensive qualifying examination would be appropriate and perhaps required at the undergraduate/graduate interface. The specific purpose of such an examination would be to assure the public and the profession that individuals were competent to assume responsibility for providing patient care in a graduate educational setting.

Thus, the concept of the Comprehensive Qualifying Examination (CQE) was derived from the following premises: (1) the licensing Boards have a societal obligation to assure the public that newly graduated physicians possess the capabilities required for the care of patients, but at present there is no mechanism for fulfilling this responsibility; (2) receipt of the M.D. degree denotes readiness to pursue further formal education, but does not denote readiness to practice medicine; (3) the existing Part I and II examinations of the NBME have become useful instruments for measuring educational achievement at defined nodal points in the educational continuum, but as such, have not been designed to integrate the basic and clinical sciences nor to assess problem-solving skills requisite for assuming new responsibilities for the care of patients; and (4) a comprehensive qualifying examination at the interface of undergraduate and graduate medical education should address the evaluation of those capabilities required for the effective care of patients under supervision during the first postgraduate year.

The remainder of this report addresses the historical evolution of the concept of the Comprehensive Qualifying Evaluation Program, methods employed in identifying the competencies required of first-year graduate physicians, and the manner in which these competencies are employed in the construction of the examination.

Evolution of the Comprehensive Qualifying Examination

On February 19, 1973, the Executive Committee of the National Board of Medical Examiners (NBME) took the following action on the report of the Goals and Priorities Committee:

(1) Approve the report of the Committee on Goals and Priorities and accept the position that it will constitute the general framework for the future development of the National Board;

(2) Recommend to the National Board that it do the same; and

(3) Recommend to the National Board that the Executive Committee be authorized to proceed with the development of mechanisms for carrying out the implementation of the future efforts of the Board consistent with the general framework of the recommendation.

On March 24, 1973, the NBME at its Annual Meeting approved the following motion: "that the National Board accept the report of the Goals and Priorities Committee and assign to the Executive Committee of the Board the authority of priorities in its implementation."

Between 1973, when the GAP Report was made public and 1976, multiple individuals and organizations were involved in discussions of the CQE concept.

In March of 1974, the National Board's Invitational Conference was devoted to a full discussion of a comprehensive qualifying examination. In May of 1974, an Advisory Committee on Undergraduate Medical Evaluation was appointed to address the issues and questions concerning a comprehensive qualifying examination that had been raised at the March meeting. The Committee reviewed all communications concerning a comprehensive qualifying examination that were received by the Board, and consulted with representatives of several professional organizations, including the Federation of State Medical Boards, the Coordinating Council on Medical Education, the Council on Medical Education of the American Medical Association, the American Board of Medical Specialties, and the Association of American Medical Colleges.

In 1975, the Advisory Committee on Undergraduate Medical Evaluation endorsed the validity of the concept of a Comprehensive Qualifying Examination (CQE) and stated that:

(a) The primary purpose of the CQE is to assist in assuring the public and the profession that the physician who is providing patient care during graduate medical education has demonstrated the requisite and measurable knowledge and skills to do so.

(b) The design and development of the CQE is being directed toward meeting its primary objective and, unlike Parts I and II, the CQE is not intended to provide the basis for assessment of academic achievement in the biomedical sciences.

(c) Irrespective of the future implementation of the CQE as may be determined by the state licensing boards, the NBME will continue to develop the traditional Parts I and II examinations and will continue to make these examinations available to faculties for the evaluation of academic achievement in the various disciplines of the basic and clinical sciences.

(d) The NBME will continue and extend its services in providing medical educational achievement examinations as requested by medical schools.

(e) The National Board continues to endorse the concept that the faculties of the schools of medicine have the responsibility and authority to establish their own objectives, curricular content, evaluation procedures, and standards for granting the M.D. degree.

The NBME did not proceed with any definitive steps to implement the CQE concept by developing a prototype examination until the AAMC and the Federation of State Medical Boards (FSMB) had adopted formal positions that endorsed the concept.

In 1975, following study by a task force and extensive discussion within its Councils, the Assembly of the Association of American Medical Colleges (AAMC) endorsed the concept of the proposed comprehensive qualifying examination. Because of the close relationship and dependency of the NBME upon the academic community for the content and quality of its examinations, this endorsement by the AAMC was a major factor in influencing the National Board to proceed with further consideration of the CQE.

The concept of a uniform, nondiscriminatory process of licensing has been a goal of the Federation of State Medical Boards (FSMB) for many years. It first became a semi-reality in 1968, when the FLEX examination was introduced to replace multiple separate examinations administered by each individual state medical board. In 1975, the FSMB, recognizing a responsibility for surveillance of physicians engaged in graduate medical training, endorsed the concept of the CQE. In 1976, the FSMB reaffirmed this interest and requested the NBME to develop a prototype of the Comprehensive Qualifying Examination which might serve as the initial evaluation instrument in the licensing process with a subsequent examination required for licensing physicians for the independent practice of medicine. The FSMB refers to this two-step sequence of examinations as the FLEX I-FLEX II concept.

At the Annual Meeting of the NBME in March 1976, this growing consensus led the Board membership, 80% of whom represent the academic community, to commit the NBME to developing a prototype CQE.

In 1977, a small Steering Committee, chaired by Dr. C. William Daeschner, Jr., was appointed by the Executive Committee to oversee the development of a CQE prototype. Simultaneously, Dr. Bryce Templeton assumed the position of full-time director of the Comprehensive Qualifying Evaluation Program. Since 1977, the Executive Committee and the Board, at each regular meeting, have received formal progress reports on the CQE.

In 1978, the developmental process was divided into two separate but interrelated parts: (1) the construction of a prototype examination to assess extramurally an individual's knowledge, clinical judgment, and problem-solving ability in the basic and clinical sciences; and (2) the development of methodologies to assess intramurally an individual's attitudes, clinical skills, and interpersonal relationships. The entire process of developing these various assessment procedures is called the Comprehensive Qualifying Evaluation Program, or CQEP.

The CQEP Steering Committee developed a position paper identifying several working premises that provided a basis for the Steering Committee and the staff of the National Board to proceed with development of the CQEP. These were approved by the Executive Committee in October 1978 and discussed in considerable detail for a full day at the annual meeting of the National Board in March 1979. Based upon the outcome of workshops and plenary discussions, initiatives were taken to construct a prototype of the Comprehensive Qualifying Examination.

During the past year, three major concerns of the academic community have surfaced. One is related to the need to clarify who will be responsible for the quality of the CQE assuming it will be sponsored by the FSMB and used as a licensing examination. The second concern focuses on whether the CQE will contain an adequate assessment of the basic medical sciences. And the third relates to the implications of a uniform single pathway to licensure. The National Board's responsibility resides in maintaining the highest quality possible in its examinations and in continuing to serve the expressed needs of both the schools of medicine and the licensing agencies. In order to address some of these concerns, the National Board has taken the following steps.

The Executive Committee of the NBME at a meeting in November 1980 reviewed and endorsed a preliminary statement indicating that the National Board would continue to appoint test committees required for the construction of the proposed licensing examinations and would continue to be responsible for the content, quality, and standard-setting procedures of these examinations -- responsibilities the NBME presently exercises for the Parts I, II, and III examinations. The FSMB would have the authority to review these examinations -- in the same manner in which any state licensing board today can review Parts I, II, and III and the FLEX examination -- to determine whether it will choose to accept them for licensing purposes.

At its Annual Meeting in 1980, the Board acted unanimously to endorse the CQE prototype with respect to its format, design, and the process used for its development. However, in the course of reviewing this initial prototype, the Board recognized that the examination did not adequately meet the stated objectives with respect to the introduction of a meaningful amount and quality of basic science material. Although 41% of the individual items had been selected from those created by Part I test committees, it was evident that these items did not address the understanding of basic scientific principles in the manner expected of students who have acquired the additional knowledge and understanding of clinical sciences by the end of medical school. Accordingly, the Board directed that an effort to enhance content validity through an increased emphasis upon the scientific basis of medicine be initiated promptly. To meet this need, a task force was established consisting of basic scientists and scientifically oriented clinicians to devise questions that would address multiple concepts of the medical sciences that are felt to be essential for a graduating physician if he is to comprehend the scientific basis of normal and abnormal biology, and if he is to have the knowledge required for the assimilation of new concepts and pertinent innovations in the medical sciences in the future.

The task force has been at work over the past nine months under the Chairmanship of Dr. Roy Swan, Professor of Anatomy at Cornell and former Chairman of the Part I Anatomy Test Committee. The process and outcome of this effort to date have been most gratifying. Working in teams consisting of one basic scientist and one clinician, the task force has generated a number of challenging test questions, each of which has been derived from an explicit statement of a fundamental scientific principle or concept and the capability being tested. Based upon review of the process and outcome of this effort, the test committee chairmen and members of the Executive Committee have been most supportive of this endeavor. The task force is continuing its work and will be presenting a full report to the Board in March 1981.

One of the anticipated benefits of this effort is that complex medical science questions will be introduced that have relevance to some clinical phenomenon and that elicit more than a recall of factual information. If the CQE is implemented as a requirement for licensure, it will do a great deal to abolish the attitude expressed by many medical students, i.e., that once the second year of school is completed and Part I is passed, the medical sciences can be put aside. Contrary to the concerns of some, it is believed that the CQE will have a positive and supportive influence on the role of the basic medical sciences in the education of a physician.

Decisions regarding acceptance of NBME certification for licensure reside with the individual state medical boards. Thus, decisions concerning the potential implementation of a uniform pathway to licensure can be made only by these same licensing authorities. While it cannot be predicted how the system of licensure will evolve in the future, the National Board will continue to provide its Parts I, II, and III examinations and its certificate for licensure as long as the state medical boards accept them.

It is possible that some state medical boards having accepted FLEX I and FLEX II, will continue to require a comprehensive examination in the basic medical sciences as a prerequisite for admission to FLEX I. Nonetheless, the National Board is committed to continuing the development and provision of its Part I and Part II examinations to meet the needs of the medical schools for standardized examinations in the basic and clinical sciences. Furthermore, the NBME has committed extensive resources to expanding its capabilities to serve the diverse needs of the schools of medicine. This effort has been greatly enhanced by a recent grant award from The Commonwealth Fund in the amount of $350,000 to help support these activities.

In providing the Part I and Part II examinations, the NBME will continue to rely upon the expertise of faculties in the development of examinations designed to evaluate the acquisition of knowledge and skills in the biomedical sciences related to undergraduate medical education. Furthermore, to assure the quality of the CQE, the NBME will continue to rely upon the active participation of faculties in its design and construction to reflect the integration of subject matter in the basic and clinical sciences needed to assess the knowledge, understanding, and problem-solving abilities requisite to the effective delivery of health care in a supervised setting.

CHAPTER II. DETERMINING THE PERFORMANCE ATTRIBUTES ESSENTIAL TO ACCEPTING PATIENT CARE RESPONSIBILITIES

The purpose of this report is to provide a description of attributes that are felt to be essential in order for a physician to undertake patient care responsibilities associated with supervised practice during residency training. These attributes will be examined from five major perspectives. Each perspective will be described briefly here, and in more detail later in this chapter. These five perspectives are listed below.

Figure 1. Perspectives for Identifying Physician Performance Attributes

1. Abilities (e.g., knowledge and understanding)
2. Tasks (e.g., taking a medical history)
3. Individual competency statements (e.g., can list indications for major drugs ...)
4. List of important diseases and clinical problems
5. Other important perspectives (e.g., organ systems, causal factors, etc.)

Briefly, these five major perspectives are characterized as follows. First, a group of abilities includes cognitive capabilities (knowledge and understanding; and problem solving and clinical judgment); and performance characteristics (doing clinical procedures, the use of interpersonal skills, and a willingness to apply one's knowledge and skills on a daily basis). Second, a series of tasks includes patient-oriented activities such as taking a medical history, performing a physical examination, using the clinical laboratory, etc.; and several other types of professional tasks, including employing special sources of information (use of references, consultants, etc.), and assuming certain professional responsibilities in the community at large. Third, a lengthy list of statements will describe in more specific terms the many attributes that make up the above abilities and tasks. (These statements are called competency statements or competencies; hence, this booklet is referred to as a competency document.) Fourth, a list of diseases (e.g., diabetes mellitus) and clinical problems (e.g., jaundice) has been prepared to identify those disorders that should require special attention because the resident will likely encounter them during the first postgraduate year. Finally, a number of other perspectives that are also deemed important will be reviewed: e.g., organ systems, age of the patient, causal factors, etc.

In summary, the competence of a physician to assume patient care responsibilities under supervision will be defined from the perspective of five major abilities as applied to ten major tasks. The definition will include a detailed list of competency statements and a list of especially important diseases and clinical problems, with appropriate attention to a variety of additional factors, including organ systems, causal factors, age of the patient, etc.

Five Major Perspectives in Defining Physician Competence

Abilities

Beginning in 1959, three national educational organizations joined forces in order to prepare several documents for the purpose of codifying various educational outcomes. One major purpose of this effort was to improve communication among educators who are responsible for curriculum planning and evaluation of student performance. The work was undertaken with the assumption that most educational outcomes could be classified according to one of the following three areas labeled domains: the cognitive affective, or psychomotor domains. Two manuals (called taxonomies) that described the cognitive and affective domains were approved and published by the sponsoring organizations. In addition, several educators subsequently published taxonomies of the psychomotor domain; however the latter never obtained endorsement by any of the original sponsoring organizations. The taxonomy of cognitive outcomes has been used fairly widely, but the taxonomies of the affective and psychomotor outcomes have not been as popular.

In reviewing the above three taxonomies of educational outcomes, the CQEP project staff concluded that the outcomes of undergraduate medical education could best be organized by modifying the cognitive-affective-psychomotor classification. The reasons for developing a new classification are fairly evident. For example, among the cognitive outcomes, both knowledge and problem solving were thought to be especially important and therefore, should be identified separately.

In reviewing the psychomotor taxonomy, it was apparent that there is a group of related physician competencies, all of which require certain psychomotor abilities: performing a physical examination, conducting various diagnostic tests, and carrying out certain types of therapeutic interventions; however, acquisition of these competencies also requires knowledge and problem solving about what should be done and how it should be done (i.e., competencies from the cognitive domain), and a number of other attributes having to do with thoroughness, accuracy, willingness to repeat certain actions, and concern about the patient's sense of privacy (i.e., competencies from the affective domain). Therefore, these competencies that include some cognitive and affective elements as well as psychomotor attributes that are necessary in order to perform various procedures have been called technical skills.

Another group of important physician competencies includes various communication skills which are essential not only in taking a medical history, but also in performing a physical examination, reviewing a plan of treatment with a patient, and working with colleagues. These competencies have been termed interpersonal skills. These competencies draw heavily on knowledge and problem-solving abilities (i.e., the cognitive domain) and from a number of other attributes such as sensitivity towards the feelings of others, attitudes about one's work, etc. (i.e., the affective domain).

Finally, there were a number of other performance characteristics, including the willingness to employ one's knowledge and problem-solving ability on a day-to-day basis in working with specific patients and in carrying out other professional responsibilities. These competencies also require knowledge and problem-solving abilities and, in addition, a willingness to apply these skills in an appropriate and consistent manner. We have referred to these attributes as work habits and professional attitudes.

We have grouped these five sets of characteristics together and refer to them as abilities. The five abilities are listed below and are contrasted with the three additional categories of educational outcomes.

Figure 2. Contrast of Traditional Classification of Educational Outcomes With a List of Five Abilities

Traditional Organization of Educational Outcomes		Proposed Classification of Physician Competence	
1. Cognitive	Domains	A. Knowledge and Understanding	Abilities
2. Affective		B. Problem Solving and Judgment	
3. Psychomotor		C. Technical Skills	
		D. Interpersonal Skills	
		E. Work Habits and Attitudes	

In order to facilitate communication regarding these five abilities, more detailed definitions of each term have been prepared and are shown below in Figure 3.

Figure 3. Five Abilities Used in Defining Physician Competence

A. Knowledge and Understanding - to demonstrate a thorough knowledge of basic medical and clinical science concepts and principles that form the understanding of medical care; to be able to describe and explain these ideas, concepts, and principles; to be able to describe the meaning of specific signs and symptoms and the results of other clinical investigations; and to demonstrate an understanding of appropriate forms of therapy for a designated group of disorders and mechanisms by which each intervention achieves its effect.

B. Problem Solving and Clinical Judgment - to recognize the presence of clinical problems; to collect information about the problem from a variety of sources; to evaluate clinical data based upon a mastery of general probabilities concerning the occurrence of certain clinical problems; to generate and reject diagnostic hypotheses regarding a given patient based on the available data; and to use diagnostic conclusions in the formulation and implementation of appropriate plans for management.

C. Technical Skills - to perform a variety of procedures for which psychomotor skills play an especially important role, including the performance of various aspects of a physical examination, conducting diagnostic procedures (e.g., obtaining an arterial blood sample) and undertaking therapeutic maneuvers (e.g., cardiopulmonary resuscitation).

D. Interpersonal Skills - to listen attentively to and understand the patient's verbal and non-verbal behavior; to use reassurance; to respond with appropriate behavior to a variety of patient affects; and to make use of interpersonal skills in working with other health professionals.

E. Work Habits and Professional Attitudes - to demonstrate during the conduct of various professional responsibilities, objectivity, thoroughness, persistence, efficiency, dependability, healthy skepticism, and devotion to the continuing needs of patients and their families; to show a willingness to handle professional responsibilities in a manner which will maximize the likelihood of achieving favorable health care outcomes; and to perform all professional responsibilities in an ethical manner.

Tasks

In developing a list of competencies that are essential for practice under supervision, we examined several research and development studies that had been undertaken to help define the competencies of physicians in specific specialties or at other levels of training. A careful review of an internship study which the NBME had initiated constituted an early phase of this aspect of our work. The purpose of the internship study had been to identify the attributes required of an intern. The study had been completed during 1959-1960 with the assistance of the American Institutes for Research (AIR). The AIR/NBME project team collected over 1,000 critical incidents of intern performance, each incident reflecting an example of very effective or very ineffective behavior on the part of an intern. Subsequently, these critical incidents were reviewed and organized by the AIR/NBME project staff into a list of nine major areas of clinical performance: history, physical examination, tests and procedures, diagnostic acumen, treatment, judgment and skill in implementing care, continuing care, physician-patient relation, and responsibilities as physicians.

After reviewing the AIR/NBME report, the CQEP staff studied a number of other reports which were also designed to spell out the roles and attributes of physicians. These included reports reflecting the work of the American Board of Orthopaedic Surgery (1968), the American Board of Pediatrics (1974), the Committee on Certification in Child Psychiatry of the American Board of Psychiatry & Neurology (1978), and the American Board of Internal Medicine (1979). The staff also reviewed educational objectives of various medical schools as well as written recommendations of several specialty societies. Reports from several NBME research programs were also consulted (e.g., a definition of interpersonal skills that had been developed as part of the NBME's interpersonal skills project).

Many of the above documents placed considerable emphasis on a group of tasks that had been identified in the AIR/NBME internship study: history taking, performing a physical examination, use of the laboratory and other diagnostic aids, defining clinical problems, and managing treatment programs and other forms of intervention. In addition, there were several other patient-oriented tasks that appeared to be especially important: record keeping; employing special sources of information; and monitoring and maintaining the health of individual patients. Finally, there were two tasks which, although not directly applicable to the physician's work with individual patients, were felt to be essential in assuring that the physician would maximize his or her effectiveness throughout a lifetime of practice. These tasks included taking on various professional responsibilities in the community; and maintaining and upgrading the physician's knowledge of the field. In summary, we found ten tasks that seemed to be especially important. These tasks appeared in most of the documents describing the roles and competencies of physicians in various specialties and in various levels of training; these tasks were judged by the Steering Committee, the staff, and a variety of other medical education consultants who have reviewed preliminary drafts of this report as important characteristics in the training of a physician. These tasks are listed and defined in Figure 4 on the next two pages.

Figure 4. Ten Important Physician Tasks

1. Taking a History - to conduct a medical history; and to interpret historical data obtained from patients, relatives, and/or medical records.

2. Performing a Physical Examination - to conduct various types of physical examinations and to interpret physical examination findings.

3. Use of Diagnostic Aids (includes laboratory, radiographic, and other investigative methods) - to select and interpret tests involving the examination of blood, urine, and other body fluids or tissues; to select and interpret tests, both invasive and noninvasive; to assess other bodily functions, including the use of psychological tests; to understand the indications for and to interpret the findings of special diagnostic procedures, including thoracentesis, paracentesis, and endoscopy procedures, and biopsies (does not include major surgical exploration such as laporotomy or craniotomy).

4. Defining Problems - to synthesize information from various data sources, including the history, physical examination, clinical laboratory, and other special studies; and to establish a list of likely clinical problems.

5. Managing Therapy
   - non-surgical - to select and apply a variety of pharmacologic and non-surgical therapeutic interventions; and to monitor the patient's progress.
   - surgical - to understand the indications for various forms of surgical intervention; to prepare a patient for surgery; and to monitor the patient's postoperative progress.
   - psychological - to employ psychotherapeutic interventions, including assisting patients in handling grief, and helping them cope with the common kinds of life crises, including illness.
   - education - to provide patients with the information which will help them cope with illness and comply with management plans.

6. Keeping Records - to record appropriate information primarily in the patient's medical record in order to facilitate communication among health professionals, to aid in the patient's continued care, and to document the care in an accountable manner.

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7. Employing Special Sources of Information - to make use of physician consultants and other health professionals based on generally accepted guidelines and based on one's knowledge of one's own limitations; and to make use of standard texts, journals, and other sources of information about patient care.

8. Monitoring and Maintaining Health - to assist both individual patients and groups of all ages to employ the principles of preventive medicine, including immunization, and periodic age-specific health assessments; to recognize special risk factors and assist patients in dealing with them; and to monitor the patient's ability to maintain health.

9. Assuming Community and Other Professional Responsibilities - to allocate time for both community responsibilities and one's own family; to identify a small group of peers with whom to air, in a reciprocal manner, personal and professional concerns; to take on responsibilities for working effectively with the group associated with one's individual and professional activities, both ambulatory and hospital based; and to assume one's share of responsibilities at the local community, county, state, and national level.

10. Maintaining Professional Competence - to maintain and update one's professional competence, including advances in basic medical sciences which will form the basis of tomorrow's medical practice, and advances in clinical care.

Competency Statements

The lists of tasks and abilities provide useful outlines in defining physician competence. However, it was felt desirable to prepare a more detailed list of specific behaviors that would be expected of a PGY-1 resident. These brief descriptions are called competency statements (see Figure 5 below). These statements will be useful to medical educators who serve on written examination test committees; and to other medical educators who are responsible for the development of other kinds of evaluation procedures. In addition, the competency statements and brief vignettes illustrating their intent, will prove valuable to medical students as they prepare for residency training.

Figure 5. Example of Competency Statement

Can list likely diagnostic possibilities for commonly occuring physical findings.

Similar lists of competency statements have been included in competency documents prepared by several other groups, including the AIR/NBME internship project team, the American Board of Pediatrics, and the Committee on Certification in Child Psychiatry of the American Board of Psychiatry and Neurology.

We began our development of this list by reviewing the 1959-1960 AIR/NBME internship report cited above. In the years since the publication of that report, several reviewers had called the NBME staff's attention to important deficiencies in it. For example, the listing of competencies which grew out of the original study gave very little explicit attention to the physician's knowledge of medicine. For this and other reasons, several NBME staff members had prepared revisions of the 1960 listing of physician competencies. Their revisions proved to be a valuable source of competency statements. (This report does not contain the complete list of competency statements. However, Chapter III includes a complete list of all of the competency statements for one cell of the matrix. In addition, copies of the entire list of competency statements will be available during the workshops on the afternoon of Thursday, February 26, 1981.)

In developing the current list of competencies, we have added a number of statements reflecting the importance of a physician's knowledge and problem-solving ability in both the basic and clinical sciences, thereby, enhancing the original 1960 list. In addition, competencies concerning interpersonal skills have been expanded reflecting an improved conceptualization of these abilities based on the results of recent research linking these physician behaviors with important health outcomes. The current list of competencies also reflects certain other advances in our understanding of health care that have taken place over the past two decades: a better appreciation of a physician's approach to the process of diagnostic inquiry; a better understanding of the value of patient education and some of the other factors which influence a patient's

compliance with a recommended treatment plan; a better appreciation of the importance of the medical record and how it is organized; and a growing awareness of a number of lay concerns which have become more apparent in recent years.

Competencies reflecting concerns of patients and the general public focused on several areas. For example, there has been an increased awareness of the patient's desire and need for information regarding serious illnesses. Women, members of minority groups, and others have expressed concerns regarding the need for change in attitude on the part of many physicians in order to handle the individual needs of these patients. A variety of consumer groups have expressed growing concern about the escalating costs of medical care and have indicated a strong preference that physicians be knowledgeable about the cost of diagnostic procedures, drugs, and other forms of treatment. There has been both professional and and public recognition of the need for physicians to acknowledge errors to patients and their families. Finally, other competencies reflect concerns about the physician trainee's lifestyle during formal education and a desire of many medical educators to try to offset the all too frequent occurrence in the physician's later life of such personal and professional catastrophies as the physician's abuse of alcohol and drugs, sexual involvement with patients, and suicide.

Matrix of Tasks and Abilities: How could these competency statements be organized in a manner that would be most helpful in guiding the design of a Comprehensive Qualifying Evaluation Program? A two-dimensional matrix was constructed with the ten tasks listed along the verticle axis and the five abilities listed along the horizontal axis. A two-dimensional matrix has been employed by a number of medical educators as well as other groups in the design of evaluation programs and in other aspects of educational planning. (See the matrix illustrated in Figure 6 on the next page.)

The term, dimension, is defined for the purpose of this document as a group of related characteristics that together prove to be useful in organizing large numbers of important competencies. Thus, the terms tasks and abilities are both considered to be dimensions. Similarly, later in this report, there are references to a number of other dimensions such as diseases, organ systems, age of the patient, etc. To the reader with special interest in mathematics and measurement theory, this use of the term dimension reflects nominal scale properties and does not imply an attribute that can be measured in a quantitative or even semi-quantitative manner. The nominal characteristics of the dimensions are further illustrated by the fact that there are some cells in the matrix for which we have, as yet, not identified any competency statements.

This matrix has proven to be helpful in several ways. In particular, it has been useful in deriving the overall plan for the Comprehensive Qualifying Evaluation Program. It has also provided a mechanism for organizing the competency statements. In addition, the matrix provides a means of highlighting the difference between having the cognitive capability to perform important tasks; and the actual per-

Figure 6. Matrix of Tasks and Abilities Used in Organizing Competencies Required of Medical Students about to Take on the Clinical Responsibilities of Residency Training

	A B I L I T I E S				
T A S K S	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
1. Taking a History					
2. Performing a Physical Examination					
3. Using Diagnostic Aids					
4. Defining Problems					
5. Managing Therapy					
6. Keeping Records					
7. Employing Special Sources of Information					
8. Monitoring & Maintaining Health					
9. Assuming Community & Professional Responsibilities					
10. Maintaining Professional Competence					

formance of the tasks in an appropriate manner, either episodically or over time. This has been illustrated in Figure 7. Columns A and B contain the competencies that reflect the individual's cognitive capa-

Figure 7. Use of a Matrix to Illustrate the Contrast between Cognitive Capability and Performance

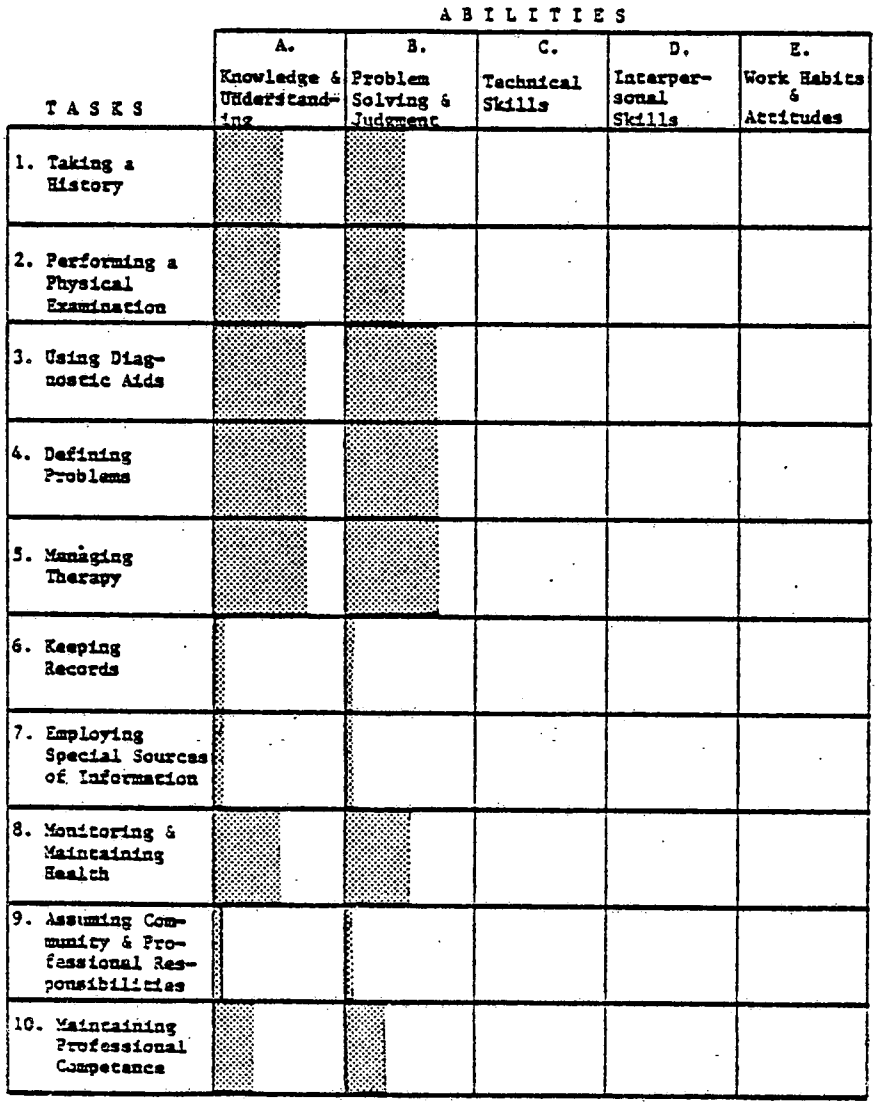
	Cognitive Capability		Actual Performance		
	ABILITIES				
TASKS	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
1. Taking a History					
2. Performing a Physical Examination					
3. Using Diagnostic Aids					
4. Defining Problems					
5. Managing Therapy					
6. Keeping Records					
7. Employing Special Sources of Information					
8. Monitoring & Maintaining Health					
9. Assuming Community & Professional Responsibilities					
10. Maintaining Professional Competence					

bility of performing the ten tasks. Column C and D represent the ability to actually perform certain technical and interpersonal skills, especially as demonstrated in an episodic manner. Column E represents the ability to demonstrate other attributes over time.

Basic Medical Sciences: The basic medical sciences play an important role in a definition of physician competence. The acquisition of an understanding of the basic medical sciences begins before entry into medical school, typically procedes in an intense manner during the first

two years of medical school, and continues throughout the remainder of medical school and residency training. For the practicing physician, an updating of an understanding of basic medical sciences plays a significant part of the maintenance of professional competence throughout a physician's career. The role of basic medical sciences in the definition of physician competence described herein is illustrated in Figure 8 below. The stippled portion of this matrix illustrates the location of competency statements related to basic medical sciences. These basic medical sciences play an especially prominent part in the cognitive portion of the matrix, (columns A and B), including tasks 1 - 5, 8, and 10. An understanding of basic medical sciences has an important impact on clinical performance.

Figure 8. Location of Competency Statements Derived From Knowledge and Problem-Solving Ability Regard- Basic Medical Sciences

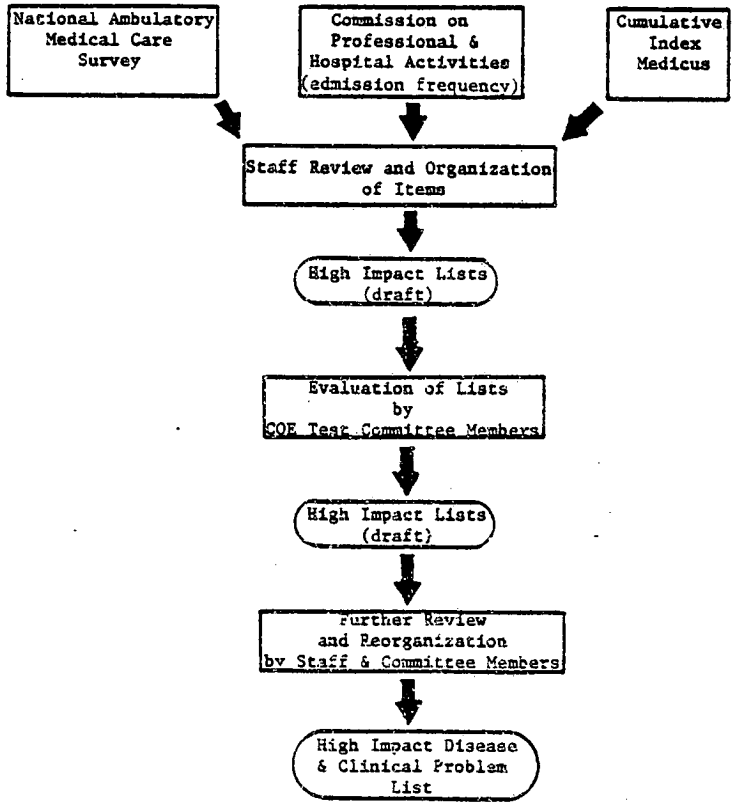


In summary, a third perspective that can be used in identifying physician performance attributes is derived from a large group of competency statements. A comprehensive listing of these competency statements has been prepared and the statements, in turn, have been organized by means of a two-dimensional matrix of tasks and abilities.

High Impact Diseases and Clinical Problems

A fourth perspective for identifying physician performance attributes is represented by a list of the many diseases and clinical problems with which the resident should be familiar. The number is almost infinite. Therefore, it would be impossible to expect every medical student to have a comprehensive knowledge of all of them. A more realistic approach could be achieved by developing a list of disorders which should be the special focus of attention by medical students before undertaking patient care responsibilities of residency training. The project staff developed such a list which is contained herein (see Figure 10 on next page). The disorders in this list include high impact diseases and high frequency clinical problems. These terms are defined on the following page.

Figure 9. Method Used in Developing High Impact Disease and Clinical Problem List



High impact disease: a disease which reflects some combination of the following factors, — high incidence or prevalence, high morbidity or mortality, a high potential for effective treatment and/or prevention, and a high degree of likelihood that the physician can play an important role in either alleviating suffering, preventing morbidity, and/or preventing premature death.

High frequency clinical problem: a recognized pattern of signs and symptoms (e.g., congestive heart failure) which reflects some of the same factors as defined in high impact disease.

The definition of these terms drew heavily from the list of factors recommended by the Joint Commission on Accreditation of Hospitals and others regarding the selection by hospitals of topics for the focus of medical care evaluation studies.

In preparing these lists of diseases and problems, the project staff reviewed a number of reports and other documents. One important source of information was a list of the most frequent causes of admissions to acute care hospitals as compiled by the Commission on Professional and Hospital Activities (CPHA). Other important data were obtained from the National Ambulatory Medical Care Survey (NAMCS) reports. In addition, the list of top 10 causes of death for various groups (age, sex, and ethnic origin), within the United States provided useful information. Finally, the headings contained in the Cumulative Index Medicus were reviewed to determine if there were any other diseases or clinical problems that were not brought out by the review of the above studies. (A list of high frequency signs and symptoms was also prepared, but the list was not sufficiently comprehensive; the procedures for the development of such a list are under review and a new list will be prepared.) The list of high impact diseases and high frequency clinical problems were reviewed and revised several times by means of a procedure outlined in Figure 9. The current working list is shown in Figure 10, in which the diseases and clinical problems have been combined.

During the course of the review of the list of diseases and problems, members of the project staff and the consultants identified a number of additional topics, primarily in the area of preventive medicine and health maintenance. As a result, a separate list of these topics has also been included in Figure 11.

The role of these lists of high impact diseases, high frequency clinical problems, and health maintenance activities will be seen in more detail in Chapter IV of this report, as we explore the development of examininations and other evaluation procedures.

Other Important Dimensions

The fifth perspective for viewing physician competencies is actually made up of a number of component parts which can be called dimensions. These added dimensions are as follows:

1. Disciplines within academic medicine (e.g., anatomy, anesthesiology, behavioral science, biochemistry, etc.)

2. Organ systems (e.g., cardiovascular, gastrointestinal, etc.)

3. Causal factors (e.g., allergic factors, chemical agents, genetic factors, etc.)

4. Age of patient (e.g., fetus, newborn, preschool child, etc.)

5. General systems levels (e.g., molecules, subcellular structures, the cell, tissues, organs, the individual, small groups, and the community)

6. Infectious organisms (e.g., bacteria, viruses, etc.)

7. Chemotherapeutic agents and other chemical substances

8. Medical care settings (e.g., various inpatient and ambulatory settings)

9. Chronicity (e.g., emergency, other acute care, and the managment of chronic illness)

All of these dimensions are important in the design of examinations and other techniques of evaluation in medical education.

At one time, it would have been impossible for a medical educator to make systematic use of so many dimensions. However, with the aid of computer technology, it is possible to make use of most or all of them in the development of written examinations. The use of a multi-dimensional method of examination development will be described in more detail in Chapter IV.

Figure 10. Combined List of High Impact Diseases and Clinical Problems

SYSTEM	DIAGNOSIS OR CLINICAL PROBLEM	
CARDIO-VASCULAR	Acute Bacterial Endocarditis (I)	Hypotension (I)
	Acute Myocardial Infarction (C)	Irregular Pulse (N & I)
	Angina Pectoris (C & N)	Phlebitis & Thrombophlebitis (C)
	Atrial Fibrillation & Flutter (C)	Premature Ventricular Contractions (O)
	Chest Pain (C)	Raynaud's Disease (I)
	Chronic Ischemic Heart Disease (N)	Rheumatic Heart Disease (O)
	Congenital Heart Disease (O)	Shock (O)
	Dissecting Aneurysm (I)	Traumatic Ruptured Aorta (O)
	Essential Hypertension (N & C)	Vascular Occlusion (O)
	Heart Failure (C)	Ventricular Tachycardia (O)
	Hypertension (N)	
DERMA-TOLOGIC	Acne (N)	Moniliasis (I)
	Allergic Skin Reaction (N)	Skin Cancer (I)
	Bites & Stings (I)	Skin Discoloration or Pigmentation (N)
	Burns (C)	Skin Irritations (N)
	Cavernous Hemangioma (I)	Skin Moles (N)
	Cellulitis & Abscess (C)	Urticaria (N)
	Dermatophytosis (N)	Warts (N)
	Eczema & Dermatitis (N)	
EARS EYES NOSE THROAT HEAD	Acute Glaucoma (I)	Laceration of Head and Neck (C)
	Acute Laryngeal Edema (I)	Nasal Hemorrhage (I)
	Acute Upper Respiratory Infection (N & C)	Neck Mass (O)
	Cataract (N & C)	Neonatal Conjunctivitis (O)
	Chronic Sinusitis (N)	Otitis Media (N & C)
	Cold (N)	Peritonsillar Abscess (I)
	Corneal Lesions (I)	Refractive Errors (N)
	Dental Caries (O)	Retinopathy (O)
	Diptheria (I)	Sinus Problems (N)
	Eye Pain and Irritation (N)	Sore Throat (N)
	Foreign Body - Eye (N)	Strabismus (C)
	Hay Fever (N)	Streptococcal Sore Throat & Scarlet Fever (N)
	Hearing Disorders (N)	Visual Defects (N)
ENDO-METAB-OLISM	Acute Adrenal Insufficiency (I)	Disease of Thyroid Gland (C)
	Aldosteronism (O)	Fluid and Electrolyte Imbalance (O)
	Cretinism (I)	Heat Stroke (I)
	Diabetes Insipidus (O)	Hyperparathyroidism (O)
	Diabetes Mellitus (N & C)	Obesity (O)
	Diseases of Pituitary (O)	

KEY

ABBREVIATIONS USED TO INDICATE SOURCE OF ITEM:
(C) = Commission on Professional and Hospital Activities
(I) = Cumulative Index Medicus
(N) = National Ambulatory Medical Care Survey
(O) = NBME Committee or Staff Member

SYSTEM	DIAGNOSIS OR CLINICAL PROBLEM	
GASTRO-INTESTINAL	Abdominal Injury (I)	Gastritis and Duodenitis (C & N)
	Abdominal Pain (N & C)	Gastrointestinal Hemorrhage (C)
	Acute Appendicitis Without Peritonitis (C)	Hemorrhoids (C)
	Acute Pancreatitis (C)	Inguinal Hernia (C)
	Alcoholic Liver Disease (C)	Intestinal Obstruction (C)
	Diaphragmatic Hernia (C)	Malignant Neoplasm of Colon (C)
	Diarrhea (N)	Neonatal Jaundice (O)
	Diverticula of Intestine (C)	Nongastric Peptic Ulcer With Perforation & Hemorrhage (C)
	Duodenal Ulcer (O)	Pinworm (O)
	Food Poisoning (I)	Ulcerative Colitis (O)
	Gall Bladder Disease (C)	Viral Hepatitis (C)
	Gastric Ulcer (C)	
GENITAL-BREAST	Abruptio Placentae (I)	Malignant Neoplasm
	Breast Mass or Lump (N)	Cervix (O)
	Disorders of Menstruation (N)	Endometrium (O)
	Dyspareunia (O)	Female Breast (C)
	Genital Infection (O)	Ovary (O)
	Genital Prolapse (C)	Male Breast (C)
	Impotence (O)	Pelvic Inflammatory Disease (C & N)
	Male Genital Pain (N & C)	Prostatic Hyperplasia (C)
		Septic Spontaneous Abortion (C)
		Uterine Leiomyoma (C)
LYMPH-HEMA-TOLOGIC	Adenopathy (O)	Hodgin's Disease (O)
	Anemia (N & C)	Infectious Mononucleosis (O)
	Bleeding Disorders (O)	Iron Deficiency Anemia (C)
	Disseminated Intravascular Coagulation (O)	Leukemias (O)
	Gram-Negative Septicemia (I)	Lymphoma (O)
	Hemophilia (O)	Sickle Cell Disease (O)
		Thalassemia (O)
MUSCULO-SKELETAL	Bone Cyst (O)	Metastatic Bone Disease (O)
	Derangement & Displacement of Lumbar Disc (O)	Open Wound of Finger(s) (N)
	Dislocated Shoulder (O)	Open Wound of Upper Limb (C)
	Flail Chest (O)	Osteoarthritis and Allied Conditions (N & C)
	Fractures	Osteomyelitis (O)
	Facial (O)	Osteosarcoma (O)
	Humerus (O)	Rheumatoid Arthritis and Allied Conditions (N & C)
	Neck of Femur (C)	Senile Osteoporosis (O)
	One or More Phalanges of Hand (N)	Sprains & Strains of Knee & Leg (C & N)
	Radius (O)	Sprains & Strains of Sacroiliac Region (C & N)
	Vertebral Column (C)	Suppurative Tenosynovitis (O)
	Gas Gangrene (I)	Traumatic Amputation (I)
	Gout (O)	
	Low Back Pain (N)	
	Lupus (O)	

SYSTEM	DIAGNOSIS OR CLINICAL PROBLEM	
PSYCH-NEURO	Acute LSD Intoxication (I)	Head Trauma (O)
	Anxiety (N & C)	Headache (C & N)
	Bleeding Intracranial Aneurysm (I)	Hysteria (O)
	Brain Tumor (O)	Insomnia (I)
	Carbon Monoxide Poisoning (I)	Meningitis (I)
	Carotid Artery Occlusion (I)	Migraine (N)
	Cavernous Sinus Thrombosis (I)	Myasthenia Gravis (O)
	Cerebellar Thrombosis (O)	Neurotic Depression (C)
	Cerebellopontile Angle Tumor (I)	Peripheral Neuropathy (I)
	Concussion (C)	Personality Disorders (N)
	Convulsions (C)	Poorly Controlled Aggression (I)
	Depression (N)	Rabies (O)
	Dizziness (O)	Schizophrenia (C & N)
	Drug Abuse (O)	Sleep Disorder (N)
	Epidural Hematoma (O)	Suicide (I)
	Epilepsy (O)	Tetanus (O)
	Facial Pain (N)	Transient Cerebral Ischemia (C)
	Facial Paralysis (O)	Trigeminal Neuralgia (O)
	Grief (I)	
PULMO-NARY	Acute Airway Obstruction (I)	Drowning (I)
	Acute Apnea (I)	Emphysema (C & N)
	Acute Bronchitis & Bronchiolitis (C)	Hyperventilation (O)
	Acute Laryngeal Edema (I)	Influenza (C & N)
	Acute Upper Respiratory Infection (N & C)	Laryngeal Edema (O)
	Altitude Sickness (O)	Malignant Neoplasm
	Anaphylaxis (I)	Bronchus (C)
	Asphyxia (O)	Lung (C)
	Aspirated Foreign Body (I)	Trachea (C)
	Asthma (C & N)	Pneumonia (C & N)
	Chronic & Unspecified Bronchitis (C)	Pneumothorax (O)
	Cough (N)	Pulmonary Abscess (O)
		Pulmonary Edema (I)
		Pulmonary Embolism & Infarction (O)
		Respiratory Failure (O)
		Suffocation (O)
		Tuberculosis (I)

SYSTEM	DIAGNOSIS OR CLINICAL PROBLEM	
URINARY	Acute Pyelonephritis (C) Calculus of Ureter (C) Chronic Renal Failure (C)	Cystitis (C) Malignant Neoplasm of Bladder (C)
MULTI-SYSTEM SIGNS OR SYMPTOMS	Fever (N) Nausea and/or Vomiting (N) Shortness of Breath (N) Weight Gain (N) Weight Loss (O)	

Figure 11. Special List of Problems in Preventive Medicine and Health Maintenance

PREVENTIVE MEDICINE AND HEALTH MAINTENANCE CONSIDERATIONS

Accident Prevention (O)
Childbirth (O)
Contraception (O)
Counseling (O)
Drug Abuse Prevention (O)
Environmental Hazards (O)
Geriatric Nutrition (O)
Medication Errors (I)
Nutrition (O)
Occupational Hazards (O)
Orthopaedic Screening (O)
Pediatric Nutrition Requirements (O)
Physical Fitness (O)
PKU Screening (O)
Pregnancy Nutrition (O)
Prenatal Examination (O)
Routine Gynecologic Exam (O)
Routine Medical Exam (O)
Seat Belts (O)
Smoking (O)
Toxic Substances (O)
TB Screening (O)
VD Prevention (O)
Well-Baby Exam (O)
Zoological Hazards (O)
Pinworms

CHAPTER III. ILLUSTRATIVE COMPETENCY STATEMENTS

The purpose of this section is to familiarize the reader with the competency statements, how the competency statements have been organized using the tasks and abilities matrix, and the use of corresponding examples containing brief narrative descriptions of physician behavior. In the first two parts in this chapter (pp 30-32), we have taken from Cell 3-A in the matrix, all of the competency statements that pertain to that cell. Cell 3-A includes competency statements that reflect knowledge and understanding concerning the use of diagnostic aids such as blood studies, roentgenographs, etc. At the beginning of the listing of competency statements for Cell 3-A is a figure showing row #3 from the matrix with the stippled portion calling the reader's attention to Cell 3-A. Please note that competency statement #1 concerns knowledge and understanding of the underlying principles associated with certain diagnostic tests; this competency statement reflects important aspects of basic medical sciences that pertain to understanding the use of diagnostic aids.

The three-digit number at the end of each competency statement (e.g., 128) is a file number which the staff has found useful as various revisions have been made of the entire listing of competency statements.

The second section in this chapter (pp 33-41), provides the reader with a number of additional competency statements drawn from a number of other cells in the matrix. Each page contains a diagram illustrating that portion of the matrix from which the competency statements were drawn. Each competency statement is accompanied by a corresponding example containing a brief vignette describing physician behavior which represents accomplishment of the competency statement. For most medical educators, most of the competency statements will be self evident. However, the reader should remember that this document will be made available to medical students for whom the examples may prove to be helpful.

All of the examples refer to resident physician behaviors. For the purposes of this document, the term resident refers to individuals at the PGY-1 level.

Figure 12. List of Competency Statements from Cell 3-A, Knowledge and Understanding as Applied to Use of Diagnostic Aids

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
3. Using Diagnostic Aids					

1. Can describe the underlying principles upon which a high frequency diagnostic test* is based. (128)

2. Can list important diagnostic tests to be used in confirming or ruling out the presence of high impact diseases. (125)

3. Can describe important sequencing for high frequency*, intermediate frequency**, and special impact*** diagnostic tests. (126)

4. Can describe the method used in requesting or ordering, and in performing each of the diagnostic tests in the above three lists. (127)

5. Can describe appropriate methods for the collection and care of specimens. (206)

6. Knows what to tell a patient in advance about common diagnostic tests and procedures, what will be required of the patient, the meaning of the results, and what the patient will experience. (129)

file number

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* High frequency diagnostic tests: defined as tests such as routine hematological studies, urinalysis, blood chemistries, routine cerebrospinal fluid studies, etc., that are performed with a very high degree of frequency (precise lists to be determined).

** Intermediate frequency diagnostic tests: defined as tests that are performed commonly but less frequently than above (precise list to be determined).

*** Special impact tests: defined as tests that are ordered infrequently, but are considered especially useful in the diagnosis of high impact diseases and problems.

7. Can tell where a reliable list of normal ranges for diagnostic tests is available for day-to-day use. (130)

8. Can specify a reference and its location wherein the principles and procedures of the tests, both common and unusual are explained. (131)

9. Can interpret in the absence of other data, the significance of important isolated findings for high frequency and intermediate frequency diagnostic tests (e.g., positive PPD, beta hemolysis, or blunting of costovertebral angle in chest film). (132)

10. Can describe common causes for erroneous results for high frequency and intermediate frequency diagnostic tests including the reasons for false positive and false negative results. (133)

11. Can list those high impact diseases which might account for abnormal findings for each high frequency and intermediate frequency test. (134)

12. Can report current costs to patients (± 35%) for high frequency and intermediate frequency diagnostic tests. (135)

13. Can define sensitivity, specificity, reliability, and validity as they apply to the use of diagnostic tests. (136)

14. Can describe common methods of assuring reliable and valid diagnostic test results. (137)

15. Knows major functions of and how to contact important regional and national testing resources such as public health laboratories in the same state and the appropriate federal facility. (138)

16. Can describe the meaning of the values and units of routine or screening tests. (207)

17. Can describe the limits of reliability (e.g., variability in white blood cell counts), and problems associated with subjective interpretation in various diagnostic tests (e.g., the interpretation of chest films). (208)

18. Can list in detail and describe the steps involved in: (209)

performing a venipuncture on an adult
performing an arterial puncture on an adult
performing a finger stick hematocrit
performing a thoracentesis and paracentesis
performing a lumbar puncture
performing a nasogastric intubation
performing a routine electrocardiogram
performing a subcutaneous skin test
inserting a plain catheter in the bladder of an adult male
inserting a plain catheter in the bladder of an adult female
inserting a Foley catheter in the bladder of an adult male
inserting a Foley catheter in the bladder of an adult female
obtaining throat and nasopharyngeal cultures
preparing the skin properly and obtaining venous blood for a culture
fixing or otherwise preserving tissue specimens appropriately
administering a PPD

19. Can list in detail the steps involved in: (210)

using the pipette in performing a complete blood count
performing a urinalysis
performing a Gram's stain of sputum and urine sediment
obtaining a specimen for performing a test for occult blood in the stool
performing a saline and KOH preparation of vaginal discharge
performing KOH preparation of skin scrapings for fungi
performing a cell count and India ink preparation for a lumbar puncture
maintaining sterile conditions when handling specimen containers

20. Can list the steps involved in effectively operating a light microscope. (211)

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
1. Taking a History					

CELL 1-A

Competency Statement: Can explain the relationship between the symptoms and underlying pathogenic mechanisms of high impact diseases. (112)

Example: In evaluating a 12-year-old boy who complains of the recent onset of upper abdominal pain, the resident is familiar with the progression of appendicitis symptoms beginning with referred pain to the upper abdomen and subsequent localization of tenderness in the right lower quadrant. The resident understands that the sensory innervation of the appendix is usually via the 9th or 10th thoracic nerve, whereas the innervation of the neighboring parietal peritoneum is from more caudal spinal segments.

Competency Statement: Can describe the sequence of symptom development for high impact diseases. (107)

Example: In reviewing the natural course of illness in a patient with duodenal ulcer, the resident can describe its chronic remittent nature with the early appearance of two-hour postprandial discomfort in the epigastrium, relief of symptoms with food or alkali, the later appearance of hematemesis, and other symptoms related to obstruction or perforation.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
1. Taking a History					

CELL 1-D

Competency Statement: Uses an appropriate setting to maximize privacy and comfort within the constraints of the institution's clinical facilities. (500)

Example: In obtaining a medical history from an inpatient in a four-bed room, the resident arranges to obtain the history from the patient by moving to an area of the ward which assures verbal privacy.

Competency Statement: Uses language which will facilitate communication for a patient of a given intellectual, educational, or social level. (504)

Example: The resident sees a patient with newly diagnosed essential hypertension. The patient has a high school education and operates a small diner. During the office visit, the resident tells the patient the following about the medication, "We will be giving you some medicine that will make you urinate a lot. This medication will help in bringing your blood pressure back closer to normal. The medicine will help you avoid some of the dangerous complications of high blood pressure, complications like strokes, and the failure of your heart to pump properly."

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
2. Performing a Physical Examination					

CELL 2-B

Competency Statement: Can explain the anatomical, physiological, and/or biochemical basis for important physical examination findings ...; and can describe the interrelationships of abnormalities and pathophysiology. (357)

Example: A resident assists a senior surgical resident in reducing the dislocated shoulder of a 34-year-old man who had experienced this difficulty on three previous occasions. The resident is able to contrast the range of motion and the nature of the joint structure in comparing the difference in frequency of shoulder versus hip dislocations.

Competency Statement: During the course of a physical examination, the resident can develop diagnostic hypotheses and direct or redirect focus of physical examination or other data gathering procedures to facilitate hypothesis testing. (308)

Example: A surgical resident is examining a 14-year-old boy who was admitted for an elective herniorrhaphy. Aside from the hernia findings, there are no other apparent abnormalities. Near the end of the physical examination, while examining the patient's extremities, the boy reports that he forgot to mention that he had had some trouble with arthritis at about age 10. The resident recognizes the need for a careful reevaluation of cardiovascular physical examination findings with special attention toward assessing whether or not a murmur could be heard.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
2. Performing a Physical Examination					

CELL 2-C

Competency Statement: Omits or otherwise modifies physical examination procedures when contraindicated in a given patient. (604)

Example: A woman who is 30 weeks pregnant has been advised to come to the labor floor because of painless vaginal bleeding. During the course of performing a speculum examination of the vagina, no abnormalities are discovered. The resident omits a digital examination because of the possibility of placenta previa.

Competency Statement: Detects all normal and abnormal findings during the examination. (606)

Example: During a physical examination of a patient who is scheduled for an elective cholecystectomy, the resident performs a thorough physical examination and detects a previously undiscovered rectal papilloma.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
3. Using Diagnostic Aids					

CELL 3-C

Competency Statement: Performs Gram stain of sputum ... (619)

Example: In evaluating a newly admitted 44-year-old man with recent onset of fever and pleuritic chest pain, the resident urges the patient to cough up sputum; the resident obtains a sample of sputum, performs a Gram stain, and finds large numbers of Gram positive diplococci and numerous leukocytes.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
3. Using Diagnostic Aids					

CELL 3-E

Competency Statement: Uses references, consultants, or other aids to review additional causes for unexpected or unexplained abnormal diagnostic test results. (424)

Example: A 14-year-old boy was admitted to the hospital on an emergency basis for an open reduction of a compound fracture of the humerus. The results of initial laboratory studies included the finding of 3-5 red blood cells per high power field in the urine sediment. Consulting several references, the resident reviews information concerning causes of asymptomatic microscopic hematuria and develops a plan of diagnostic studies which is then reviewed with a fellow resident.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
4. Defining Problems					

CELL 4-A

Competency Statement: Can describe the underlying pathophysiology or psychodynamics of high impact diseases that have been identified as a likely cause of an assigned patient's problem. (143)

Example: In developing a management plan for a patient with newly discovered pernicious anemia, the resident is able to explain the role of the parietal cells of the gastric mucosa in secreting intrinsic factor to make possible the absorption of vitamin B12.

Competency Statement: Can accurately diagnose high impact diseases, the recognition of which normally requires only a few elements of data. (139)

Example: A 62-year-old patient who 24 hours previously sustained a fracture of the femur, suddenly develops shortness of breath and confusion. In reexamining the patient, the resident notes petchiae over the chest wall. The resident concludes that the patient has developed fat embolization. The resident arranges for a chest film, blood gases, and consults with a senior resident about instituting treatment.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
4. Defining Problems					

CELL 4-B

Competency Statement: Can recognize indirect effects of past treatment. (319)

Example: In providing continuous care for a 67-year-old patient receiving diuretic treatment for hypertension, a resident receives a telephone call from the patient's daughter expressing concern about the patient's gradual increase in weakness and confusion. The resident is aware of the possibility of electrolyte abnormalities due to the effects of the diuretics and the need for prompt intervention if this potential problem proves to be the cause of the patient's symptoms.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
5. Managing Therapy					

CELL 5-A

Competency Statement: Can describe mechanism of action for major drugs and other forms of therapy. (148)

Example: The resident begins a program of digitalization for a 54-year-old woman with congestive heart failure secondary to advanced essential hypertension. The resident has an understanding of Starling's law of the heart, and knowledge of the sliding filament theory of striated muscle contraction and how this information facilitates an understanding of length-tension curves of contracting cardiac muscle.

Competency Statement: Can list common side effects and complications for major drugs. (153)

Example: In planning the initiation of anticonvulsant therapy with phenytoin, a resident can list the major complications including ataxia, nystagmus, diplopia, skin erruptions, gingival hyperplasia, hirsutism, and possible idiosyncratic reactions including bone marrow depression.

Competency Statement: Can describe the mechanism whereby various forms of therapy will affect signs, symptoms, and laboratory findings of high impact diseases. (149)

Example: In initiating parenteral replacement therapy for a six-month-old infant with unexplained diarrhea, the resident is able to describe the role of both tissue and blood buffer systems which help to maintain pH homeostasis.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
6. Keeping Records					

CELL 6-E

Competency Statement: Uses flow sheets to facilitate documentation of repeated measurements for the same type of data; avoids having flow sheet dictate scope or frequency of laboratory evaluation. (454)

Example: In treating a 28-year-old diabetic patient who entered the hospital in diabetic ketoacidosis, the resident modifies the medical record to include a listing of ongoing laboratory data and helps to assure that all glucose determinations, urinalyses, electrolytes, and intake/output data are promptly recorded.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
7. Employing Special Sources of Information					

CELL 7-D

Competency Statement: Gives and obtains appropriate information from other members of the health care team. (568)

Example: A 27-year-old man has recently undergone a subtotal thyroidectomy for hyperthyroidism. During work rounds, on the patients third post-operative day, the assigned resident reports plans to discharge him from the hospital. Another resident recalls seeing a laboratory report showing the presence of albuminuria on a routine post-operative urinalysis. The second resident tactfully reminds the first of the finding, and arrangements are made to initiate a series of studies in order to investigate its cause.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
9. Assuming Community & Professional Responsibilities					

CELL 9-B

Competency Statement: Can make use of the faculty, residents, and peers to help monitor his/her own clinical work. (350)

Example: In discussing the planning of activities on a given clinical assignment, the resident can describe how one might request performance feedback from a senior resident or member of the faculty and how one might alter clinical responsibilities in order to make effective use of this feedback.

ABILITIES / TASK	A. Knowledge & Understanding	B. Problem Solving & Judgment	C. Technical Skills	D. Interpersonal Skills	E. Work Habits & Attitudes
10. Maintaining Professional Competence					

CELL 10-E

Competency Statement: Shows evidence of beginning a continuing medical education program by subscribing and/or regularly reading one or more general coverage journals (e.g., JAMA, NEJM, etc.) or broad-based specialty journals (e.g., Ann Int Med, J Ped, or Am J. Fam Pract). (480)

Example: A beginning resident planning a career in general surgery continues subscribing to and reviewing the NEJM and The Medical Letter, which had been started during the third year of medical school. The resident has established a subject-oriented reprint file which the resident frequently consults in developing management plans for patients. During the first year of training, the resident adds two general surgery journals and continues a self-study program along with clinical assignments.

CHAPTER IV. USE OF COMPETENCY DOCUMENT IN DEVELOPMENT OF EVALUATION PROCEDURES

The tasks and abilities matrix as illustrated on p 19 calls attention to the group of competencies in columns A and B (Knowledge and Understanding; and Problem Solving and Clinical Judgment) that can be assessed by means of a written examination; and the various performance attributes of columns C, D, and E (Technical Skills; Interpersonal Skills; and Work Habits and Professional Attitudes) that require other forms of assessment.

Definition of competence and development of written examinations

Groups that are responsible for constructing achievement and certifying examinations in medicine normally make very careful efforts to sample broadly from a variety of aspects of a medical field. This helps to assure that the examination has content validity, an important attribute of any examination. This desire for broad sampling has not been altered by the observations of psychometricians that such tests commonly appear to be measuring primarily a single general medical knowledge factor. These observations suggest that the omission of a major segment of content (e.g., the omission of obstetrics from a general medical achievement examination) would do relatively little to change the rank ordering of examinees.

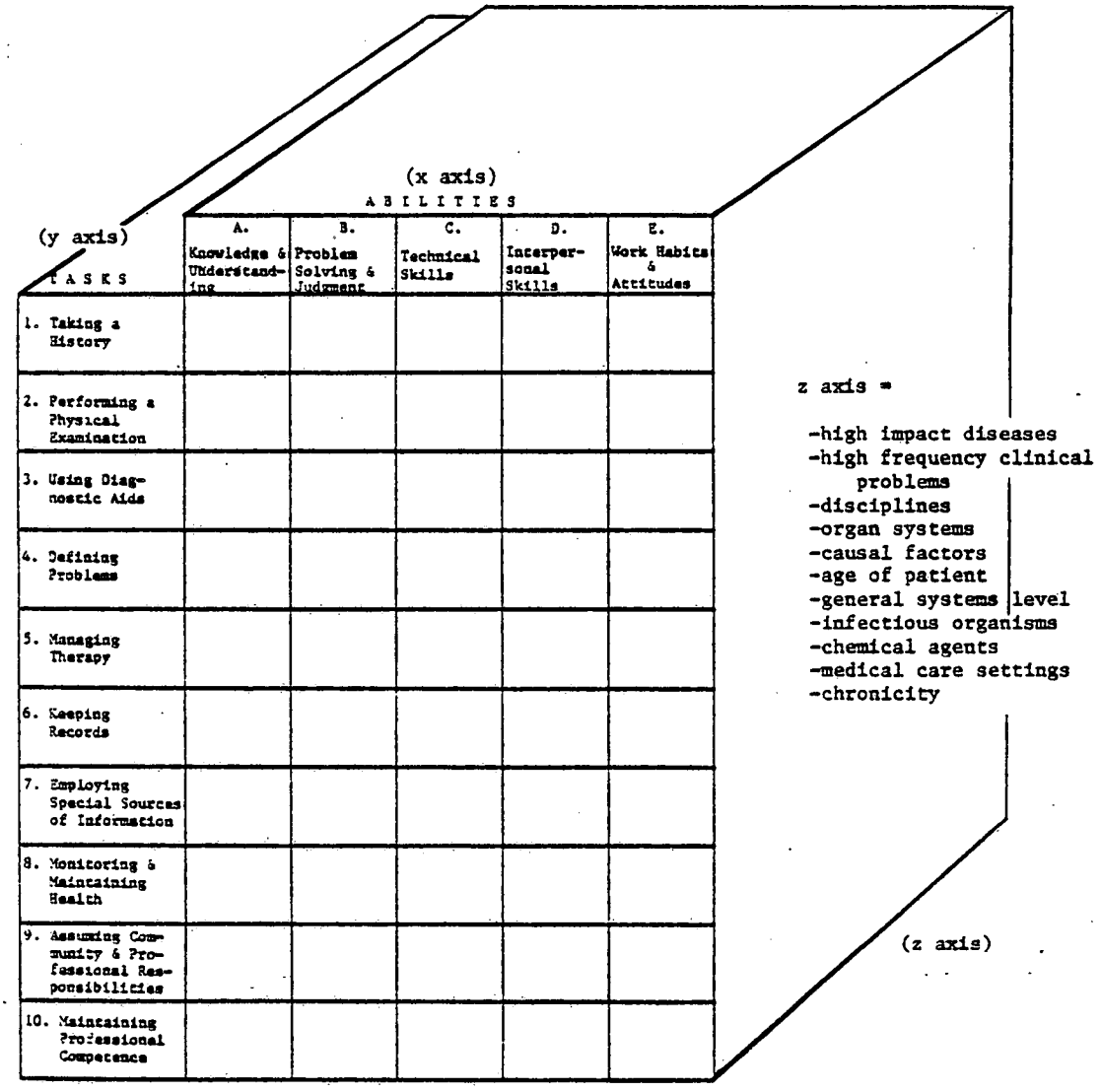
One of the difficulties in achieving effective sampling concerns the number of different dimensions which might be used in developing or analyzing a given examination. Many of the test outlines used by medical educators reflect this dilemma. Some outlines are organized primarily along one dimension (e.g, organ system), whereas other groups have developed outlines that intermix two or more dimensions (e.g., organ system and developmental stages of life). On the one hand, one dimension fails to provide the test developer with a sufficiently comprehensive method of monitoring the content of a given examination. On the other hand, the intermixing of dimensions in a test outline creates problems in assigning a given test item to one or more categories. More importantly, the creation of an outline by intermixing several dimensions fails to provide the test committee with an effective mechanism for monitoring the many important considerations that need to be monitored in order to produce a well-balanced examintion.

The definition of physician competence contained herein illustrates how it is possible to organize competency statements which describe the physician's role along a number of different dimensions. These dimensions include disciplines, organ systems, causal factors, age of the patient, etc., as well as the task dimention and the ability dimension.

Using conventional two-dimensional paper-and-pencil charts, it is virtually impossible for test committees to deal with more than two or three of these important dimensions. The use of multiple dimensions is illustrated in Figure 13 which shows not only the abilities and the tasks

on the x and y axes, but also the many other dimensions, any one of which could be represented by the z axis. In reality, this three-dimensional figure should be replaced by a figure that has thirteen or more dimensions.

Figure 13. Relationship of Tasks and Abilities Matrix to Other Important Dimensions of Physician Competence



A content expert might be able to review an examination after it has been developed in order to assure adequate sampling for some of the thirteen or so important dimensions; however, at that late stage in test development, it is often too late to make appropriate modifications to correct undue duplication or to identify and correct deficits. A solution to this problem to assure content validity along thirteen or more dimensions

has been provided with the development of computer technology. The NBME staff has been exploring the incorporation of multi-dimensional techniques in developing written examinations by means of our computerized Test Item Library (TIL).

An example which illustrates the use of multiple dimensions can be seen in the activities associated with enhancing a pool of test items. If test items within a test item pool are categorized along multiple dimensions, it is possible to determine the presence or absence of test items which deal with important linkages between two or more dimensions. For example, it is possible to perform a search to determine the extent to which each of the important patient care tasks (from Taking a History through Managing Therapy) has been employed in developing test items concerning each of the high impact diseases and/or high frequency clinical problems. The resulting data provides a mechanism for giving instructions to undertake pool enhancement activity that will minimize the likelihood of the test committee members duplicating material that is already available within the test item pool.

Although written examinations provide a mechanism for assessing most of the competencies contained in columns A and B of the tasks and abilities matrix, there are certain competencies within those two columns which are not amenable to testing via national examinations. For example, some of these competencies require knowledge of local resources, the nature of which vary from center to center. Cell 6-A (Keeping Records), Cells 7-A & 7-B (Employing Special Sources of Information), 9-A & 9-B (Assuming Community and Professional Responsibilities) and 10-A & 10-B (Maintaining Professional Competence) must be assessed by other means. In all likelihood, these competencies will require ratings by the faculty or other individuals as described below.

Definition of Competence and Assessment of Performance

The tasks and abilities matrix on p 19 (Figure 7) drew the distinction between cognitive capability and actual performance. The matrix shown on p 46 (Figure 14) outlines mechanisms whereby these performance competencies can be evaluated in a systematic manner.

In column C (Technical Skills), the most important grouping of competencies occurs in Cell 2-C (Performing a Physical Examination), 3-C (Using Diagnostic Aids), and 5-C (Managing Therapy). There are several mechanisms that have been shown to be useful in evaluating these competencies. Although traditional rating scales that are used by faculty and residents in rating students may prove somewhat useful, the performance of technical procedures probably requires explicit episodic observation. Behavioral checklists help to delineate the extent to which specific steps of a technical skill have been performed. The use of behavioral checklists by faculty members, residents, or other individuals especially trained to use them, may provide a valuable mechanism to assure that students can adequately perform these various procedures. In some cases, these behavioral checklists can be used with actual patients (e.g., observing a student perform a pelvic examination on an adult, or performing a general physical examination on an infant). In the case of certain component technical skills, the use

Figure 14. Proposed Comprehensive Qualifying Evaluation Program

TASKS \ ABILITIES	A Knowledge & Understanding	B Problem Solving & Judgment	C Technical Skills	D Interpersonal Skills	E Work Habits & Attitudes
1. Taking a History	1-A EXAM	1-B EXAM	1-C	1-D RATINGS INTERACT. ASSESS.	1-E RATINGS
2. Performing a Physical Examination	2-A EXAM	2-B EXAM	2-C SIM. LAB. RATINGS CHECK LISTS	2-D RATINGS INTERACT. ASSESS.	2-E RATINGS
3. Using Diagnostic Aids	3-A EXAM	3-B EXAM	3-C SIM. LAB. RATINGS CHECK LISTS	3-D RATINGS	3-E RATINGS
4. Defining Problems	4-A EXAM	4-B EXAM	4-C (NYI)	4-D (NYI)	4-E RATINGS
5. Managing Therapy	5-A EXAM	5-B EXAM	5-C SIM. LAB. RATE CHECK LISTS	5-D RATINGS INTERACT. ASSESS.	5-E RATINGS
6. Keeping Records	6-A RATINGS	6-B (NYI)	6-C	6-D	6-E RATINGS
7. Employing Special Sources of Information	7-A RATINGS	7-B RATINGS	7-C (NYI)	7-D RATINGS	7-E RATINGS
8. Monitoring & Maintaining Health	8-A EXAM	8-B EXAM	8-C	8-D RATINGS	8-E RATINGS
9. Assuming Community & Professional Responsibilities	9-A RATINGS	9-B RATINGS	9-C (NYI)	9-D RATINGS	9-E RATINGS
10. Maintaining Professional Competence	10-A RATINGS	10-B RATINGS	10-C RATINGS	10-D RATINGS	10-E RATINGS

Abbreviation	Proposed Type of Evaluation
EXAM	= Comprehensive Qualifying Examination
CHECKLISTS	= Ratings made by faculty or other trained observers while observing a specific event such as a physical examination of an adult patient
RATINGS	= Ratings over time by faculty, nurses, or other health personnel, and/or patients and patients' families of performance

Abbreviation	Approaches to Evaluation
INTERACT ASSESS	= Direct observation of verbal interaction of student/patient or student/simulator pairs
SIM LAB	= Observation of specific types of performance in a simulation laboratory using various mechanical devices

(NYI) = None identified yet; i.e., no competencies have been identified yet for this cell of the matrix

of various simulations including individuals who are paid to simulate patients, and mechanical devices have been shown to facilitate the evaluation of certain kinds of performance.

Although it is important to assess student performance, it may be desirable to include an assessment of cognitive aspects related to the technical skills within conventional written examinations. For example, the student's understanding of the correct method of ascertaining blood pressure readings, knowledge of important landmarks used in performing certain procedures, and an understanding of the rationale as to why technical procedures are conducted in a certain way can all be incorporated within written examinations.

In considering the assessment of interpersonal skills (column D), similar comments can be made. Examinations can be prepared so as to include test items which help to determine the student's knowledge of interviewing techniques, the student's ability to determine what should be said in a given situation, etc. However, there are studies which demonstrate that the assessment of cognitive aspects of interpersonal skills does not provide a mechanism of assuring that students will employ appropriate interpersonal skills when actually dealing with patients.

Many ratings of interpersonal skills made by faculty and other individuals have been shown to exhibit relatively low reliability. This is true even when raters have had an opportunity to observe directly the student with the patient (as opposed to relying on second-hand information from house officers and other ward and clinic personnel regarding the student's interpersonal skills). There are other techniques which provide more reliable measures of interpersonal skills. One of these is known as interaction analysis, a mechanism in which specially trained raters are taught to record judgments every few seconds about the nature of the physician-patient interaction. This technique can be employed with actual patients or with simulated patients. Another assessment technique employs the use of data checklists in which the observer determines to what extent the physician trainee has obtained important information from a given patient. This usually requires the use of simulated patients in which one has a listing of those important elements in the history which should be obtained.

Column E in the tasks and abilities matrix concerns the assessment of work habits and other professional attitudes (by definition, all other performance competencies excluding technical skills and interpersonal skills). In order to assess the competencies that constitute work habits and professional attitudes, it will be necessary to depend on ratings of day-to-day performance by individuals who are intimately knowledgeable about students' ability to apply knowledge and skills on a regular basis. Traditionally, this function has been handled primarily by members of the clinical faculty or, in some cases, designated members of the house staff. Studies of the use of rating scales in assessing day-to-day performance have often demonstrated problems in achieving good interrater reliability. There is some evidence that it is possible to obtain a satisfactory level or reliability with careful design of rating scales, well-planned

instruction on the use of rating scales, and a commitment on the part of the faculty that this evaluation activity is important. Recent studies involving collaboration of National Board staff with representatives from medical schools have also demonstrated that the faculty were able to identify a few students whom they felt to be performing in a relatively low level. The latter students are the ones who should be of special concern to the clinical faculty from two points of view: (1) What can be done to assist these students to improve their work habits and professional attitudes? (2) Are the students able to meet acceptable levels of performance to warrant taking on the responsibilities of residency training?

The problem of setting minimal standards of rating scale data will pose a special problem. So far, we have no evidence that the rating scale values of one institution are comparable to the rating scale values of another. Therefore, setting an arbitrary standard does not seem technically feasible at this time.

An alternative standard setting approach would be to encourage individual medical schools to set their own minimal standards, to collect data on work habits and attitudes, to require special remedial efforts to be taken with students at the lowest end of the performance continuum, and to have the medical school make an explicit determination regarding each student at the low end of the performance continuum as to the student's ability to meet acceptable levels of performance. There is precedent in using this approach to standard setting as illustrated in the practices employed by hospital medical audit groups in meeting the accreditation requirements of the Joint Commission on Accreditation of Hospitals.

It will be important to compare the ratings of student performance as made by the faculty with ratings made by other health personnel, especially nursing personnel, social workers, and/or others who have the type of professional training which makes them knowledgeable about the student's ability to perform adequately and at the same time, who have close contact with the students over an extended period of time. It will be important to determine whether these individuals provide additional data about students which cannot be obtained from the faculty or residents. In particular, can non-physician health personnel identify students who pose serious challenges in acquiring the necessary clinical skills that will be needed during graduate training?

Conclusions

In this report, we have described how the National Board of Medical Examiners has derived a detailed definition of physician competence. This definition of physician competence describes the characteristics that a first-year resident should have acquired before taking on the clinical responsibilities of residency training. We have also shown how this definition of physician competence can affect the development of various evaluation procedures, including written examinations. During the course of the February 26-27, 1981 meeting, the reader will be provided with additional information concerning how this definition of physician competence was used in preparing the Comprehensive Qualifying Examination. This

definition of physician competence also helps to highlight the need for other forms of assessment to evaluate a student's actual performance, including technical skills, interpersonal skills, and the exercise of appropriate work habits and professional attitudes. The National Board would welcome the reaction of individuals who read this document. We have provided a questionnaire at the end of this report in order to facilitate obtaining your suggestions about how the document might be improved.

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PROGRESS REPORT ON THE DEVELOPMENT OF BASIC SCIENCE TEST MATERIAL FOR THE COMPREHENSIVE QUALIFYING EXAMINATION

At its Annual Meeting in March 1980, the Board of the National Board of Medical Examiners approved the principles and approach to the design of the Comprehensive Qualifying Examination and authorized a field test of the prototype examination. There was recognition, however, that the basic science test material which had been selected for the prototype examination from the NBME Part I and Part II pools did not focus adequately on the depth of understanding of underlying mechanisms and their causal relationship to disease expected of graduating medical students and required for the assumption of patient care responsibilities in graduate medical education. Therefore, the staff of the NBME was directed to identify several academic consultants and begin work immediately on the development of more appropriate test materials in the basic sciences.

Two major efforts toward enhancing the quality of the basic science material for the Comprehensive Qualifying Examination were initiated. The President of the National Board appointed an interdisciplinary task force composed of both basic medical scientists and clinical scientists (see pp 58-59) and charged the task force with responsibility for developing integrated basic science/clinical science test materials which would reflect the depth of understanding expected of senior medical students. Because the task force used an approach to test development which represented a departure from the method customarily used for the Part I and Part II examinations, not all of the basic sciences were represented in this initial effort. Those disciplines ultimately represented were determined by the availability of consultants.

The task force was divided into pairs consisting of a clinical and a basic scientist. Each pair identified numerous basic science principles which were regarded as representative of the basic science knowledge important to an understanding of the biological mechanisms underlying high impact problems and diseases likely to be encountered by a first-year house officer.

Using the list of basic science principles, each team developed evaluation objectives relating the principles to an understanding of clinical phenomena. The pair then developed multiple-choice questions using the National Board's standard item formats to assess the evaluation objectives. Over the period that the teams met, the four pairs developed a total of 96 test questions, including principles and objectives for each question.

The task force believes that these materials will be effective in assessing important principles in the basic sciences, and because they also require an understanding of clinical phenomena, these materials are more directly relevant to the purpose of the Comprehensive Qualifying Examination. Members of the task force also feel that the process of developing principles and objectives prior to the writing of questions was an important step in focusing their efforts on testing those aspects of basic science which are of key importance to the capabilities required of first-year house officers. Members of the task force did recommend, however, that in the future, the identification of basic science principles not focus solely upon those related to high-impact diseases and problems, but should also include the assessment of any basic science principle regarded as important for the overall competence of a physician.

The efforts of this task force are now in a second stage. Several additional basic science/clinical science teams are being formed, including representatives of the basic sciences which were not involved in the first stage of the project. In addition, some different combinations of basic science/clinical science pairs are being used. These new teams will continue to build upon the experience of the Medical Sciences Task Force to develop a larger pool of test materials.

The second major effort toward enhancement of the basic science materials for the Comprehensive Qualifying Examination involved the development of new item formats. Several item development teams consisting of a basic scientist, a clinician and project staff were formed (see p 61). These teams have been encouraged to develop non-traditional, paper-and-pencil item formats. While the format of each problem is somewhat unique, all problems begin with a clinical vignette followed in linear format by items which ask the student to evaluate diagnostic hypotheses and either select or evaluate physical examination of laboratory data. At appropriate points in the evolution of the clinical problem, specific questions are asked in order to test the student's understanding of pertinent underlying concepts and principles in the basic sciences.

Arrangements have been made for field testing items developed in both these basic science enhancement efforts during 1981. Analyses of the results as well as feedback solicited from participants will be used to refine and direct continuing efforts toward enhancement of the basic science materials for the Comprehensive Qualifying Examination.

January 1981

COMPREHENSIVE QUALIFYING EVALUATION PROGRAM ADVISORY COMMITTEES

Comprehensive Qualifying Evaluation Program Steering Committee

C. William Daeschner, Jr., M.D.
(Chairman)
John Sealy Professor & Chairman
Department of Pediatrics
University of Texas
Medical Branch at Galveston

Lawrence Scherr, M.D.
Associate Dean
Cornell University
Medical College and
Professor and Vice-Chairman
Department of Medicine
North Shore University Hospital

Roy C. Swan, M.D.
Hinsey Professor of Anatomy
Cornell University
Medical College

William D. Holden, M.D. (ex officio)
Professor of Surgery
Case Western Reserve University
School of Medicine

Robert Barker, Ph.D. (Consultant)
Professor of Biochemistry and
Molecular Cell Biology and
Director
Division of Biological Sciences
Cornell University
formerly
Professor and Chairman
Department of Biochemistry
Michigan State University

* * *

Coordinating Committee for the Comprehensive Qualifying Examination Prototype

Robert Barker, Ph.D.
Professor of Biochemistry and
Molecular Cell Biology and
Director
Division of Biological Sciences
Cornell University
formerly Professor and Chairman
Department of Biochemistry
Michigan State University

Henry G. Cramblett, M.D.
Vice President for Health Sciences and
Professor
Department of Pediatrics and
Professor
Department of Medical Microbiology
Ohio State University
College of Medicine

C. William Daeschner, Jr., M.D.
John Sealy Professor and Chairman
Department of Pediatrics
University of Texas
Medical Branch at Galveston

Gordon H. Deckert, M.D.
Professor and Head
Department of Psychiatry and
Behavioral Sciences
University of Oklahoma
Health Sciences Center

Saul J. Farber, M.D.
Dean for Academic Affairs and
Professor and Chairman
Department of Medicine
New York University
School of Medicine

William D. Holden, M.D.
Professor of Surgery
Case Western Reserve University
School of Medicine

Continued on the next page

Harry A. Oberhelman, Jr., M.D.
Professor and Chief of
General Surgery
Division of General Surgery
Stanford University
School of Medicine

Lawrence Scherr, M.D.
Associate Dean
Cornell University
Medical College and
Professor and Vice-Chairman
Department of Medicine
North Shore University Hospital

Roy C. Swan, M.D.
Hinsey Professor of Anatomy
Cornell University
Medical College

* * *

Examination Committees for the
CQE Prototype

Interdisciplinary Review Group 1

Robert Barker, Ph.D. (Chairman)
Professor of Biochemistry and
Molecular Cell Biology and
Director
Division of Biological Sciences
Cornell University
formerly
Professor and Chairman
Department of Biochemistry
Michigan State University

Paul C. Brucker, M.D.
Professor and Chairman
Department of Family Medicine
Jefferson Medical College
of Thomas Jefferson University

Abner Golden, M.D.
Professor and Chairman
Department of Pathology
University of Kentucky
College of Medicine

Continued next column

Lee A. Harker, M.D.
Associate Professor
Department of Otolaryngology and
Maxillofacial Surgery
University of Iowa
College of Medicine

Harold G. Jacobson, M.D.
Professor and Chairman
Department of Radiology
Albert Einstein
College of Medicine

Evan G. Pattishall, Jr., M.D., Ph.D.
Professor
Department of Behavioral Science
Pennsylvania State University
College of Medicine and
Interim Dean
Pennsylvania State University
College of Human Development

* * *

Interdisciplinary Review Group 2

Henry G. Cramblett, M.D. (Chairman)
Vice President for Health Sciences and
Professor
Department of Pediatrics and
Professor
Department of Medical Microbiology
Ohio State University
College of Medicine

John R. Brobeck, M.D., Ph.D.
Herbert C. Rorer Professor
of Medical Sciences
Department of Physiology
University of Pennsylvania
School of Medicine

Robert W. Goltz, M.D.
Professor and Head
Department of Dermatology
University of Minnesota
Medical School-Minneapolis

Continued on the next page

Herschel E. Griffin, M.D.
Professor
Department of Epidemiology and
Associate Director
Graduate School of Public Health
San Diego State University

Harry A. Oberhelman, Jr., M.D.
Professor and Chief of
General Surgery
Division of General Surgery
Stanford University
School of Medicine

Roy C. Swan, M.D.
Hinsey Professor of Anatomy
Cornell University
Medical College

* * *

Interdisciplinary Review Group 3

Saul J. Farber, M.D. (Chairman)
Dean for Academic Affairs and
Professor and Chairman
Department of Medicine
New York University
School of Medicine

Gordon H. Deckert, M.D.
Professor and Head
Department of Psychiatry and
Behavioral Sciences
University of Oklahoma
Health Sciences Center

William E. Easterling, Jr., M.D.
Vice Dean and
Professor
Department of Obstetrics-Gynecology
University of North Carolina at
Chapel Hill
School of Medicine

Henry J. Mankin, M.D.
Edith M. Ashley Professor of
Orthopaedic Surgery
Department of Orthopaedic Surgery
Harvard Medical School and
Chief of Orthopaedic Surgery
Massachusetts General Hospital

Continued next column

Hugh L. Moffet, M.D.
Professor
Department of Pediatrics
University of Wisconsin-Madison
Medical School

Robert L. Volle, Ph.D.
Associate Dean for Preclinical and
Graduate Education and
Professor
Department of Pharmacology
University of Connecticut
School of Medicine

* * *

Special Consultant on Interpersonal Skills

Gordon H. Deckert, M.D.
Professor and Head
Department of Psychiatry and
Behavioral Sciences
University of Oklahoma
Health Sciences Center

* * *

Special Consultant on Technical Skills

Harry A. Oberhelman, Jr., M.D.
Professor and Chief of
General Surgery
Division of General Surgery
Stanford University
School of Medicine

* * *

Diagnostic Problem-Solving Project

Joseph Belsky, M.D.
Associate Clinical Professor
Department of Medicine
Yale University
School of Medicine and
Associate Director
Medical Residency Program and
Chief of Endocrinology and
Metabolism
Danbury Hospital

Continued on the next page

Laurence Finberg, M.D.
Professor and Chairman
Department of Pediatrics
Albert Einstein
College of Medicine

Stephen J. Gluckman, M.D.
Assistant Professor
Department of Medicine
University of Pennsylvania
School of Medicine and
Chief
Infectious Disease Section
The Pennsylvania Hospital

Bennett Lorber, M.D.
Associate Professor of Medicine
and Microbiology and Immunology
Temple University
School of Medicine

George D. Webster, M.D.
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Director of Evaluation
American Board of Internal Medicine

Charles J. Wolf, M.D.
Assistant Professor
Department of Medicine
University of Pennsylvania
School of Medicine and
Associate Director
Department of Medicine and
Head
Renal Section
The University Hospital

* * *

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Hinsey Professor of Anatomy
Cornell University
Medical College

Harold J. Bright, Ph.D.
Professor
Department of Biochemistry and
Biophysics
University of Pennsylvania
School of Medicine

Continued next column

Saul J. Farber, M.D.
Dean for Academic Affairs and
Professor and Chairman
Department of Medicine
New York University
School of Medicine

Laurence Finberg, M.D.
Professor and Chairman
Department of Pediatrics
Albert Einstein
College of Medicine

Stanley Goldfarb, M.D.
Assistant Professor
Renal Electrolyte Section
University of Pennsylvania
School of Medicine

Ward O. Griffen, Jr., M.D.
Professor and Chairman
Department of Surgery
University of Kentucky
College of Medicine

Werner K. Maas, Ph.D.
Professor
Department of Microbiology
New York University
School of Medicine

Robert L. Volle, Ph.D.
Associate Dean for Preclinical
and Graduate Education and
Professor
Department of Pharmacology
University of Connecticut
School of Medicine

Fredric D. Burg, M.D. (Consultant) *
Associate Dean for Academic Programs
University of Pennsylvania
School of Medicine

* * *

* formerly Project Director, Comprehensive Qualifying Examination

Task Force on Basic Science Problem Solving

Alfred A. Bove, M.D., Ph.D.
Associate Professor
Department of Medicine
Temple University
School of Medicine

Frances M. Finn, Ph.D.
Associate Research Professor of
Biochemistry
Protein Research Laboratory
University of Pittsburgh
School of Medicine

Jack D. Myers, M.D.
University Professor of Medicine
University of Pittsburgh
School of Medicine

Roger W. Sevy, M.D., Ph.D.
Professor
Department of Pharmacology
Temple University
School of Medicine

Ronald J. Wapner, M.D.
Clinical Assistant Professor of
Obstetrics and Gynecology
Jefferson Medical College
of Thomas Jefferson University

James E. Wheeler, M.D.
Associate Professor
Department of Pathology
University of Pennsylvania
School of Medicine

* * *

Task Force on Interpersonal Skills

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Professor and Chairman
Department of Family Medicine
Jefferson Medical College
of Thomas Jefferson University

Evan Pattishall, Jr., M.D., Ph.D.
Professor
Department of Behavioral Sciences
Pennsylvania State University
College of Medicine and
Interim Dean
Pennsylvania State University
College of Human Development

Nancy C. A. Roeske, M.D.
Professor
Department of Psychiatry and
Director
Undergraduate Curriculum Coordinator
of Medical Education
Indiana University
School of Medicine

Truman G. Schnabel, M.D.
C. Mahlon Kline Professor of Medicine
University of Pennsylvania
School of Medicine

John Schneider, Ph.D.
Associate Professor
Department of Psychiatry
Michigan State University
College of Human Medicine

Joseph Westermeyer, M.D., Ph.D.
Professor
Department of Psychiatry
University of Minnesota
School of Medicine-Minneapolis

Fredric D. Burg, M.D. (Consultant)
Associate Dean for Academic Programs
University of Pennsylvania
School of Medicine

* * *

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Thomas E. Piemme, M.D. (Chairman)
Professor
Department of Medicine and Health Care Sciences and
Director
Office of Continuing Medical Education
George Washington University
School of Medicine and Health Sciences

Wallace T. Miller, M.D.
Professor and Vice Chairman
Department of Radiology
University of Pennsylvania
School of Medicine

Paula L. Stillman, M.D.
Associate Professor
Department of Pediatrics
University of Arizona
College of Medicine and
Coordinator
Preparation for Clinical Medicine
University of Arizona
Health Sciences Center

David Wagner, M.D.
Professor
Department of Surgery
Medical College of Pennsylvania and
Director
Division of Emergency Medicine
Hospital of the Medical College of Pennsylvania

Fredric D. Burg, M.D. (Consultant)
Associate Dean for Academic Programs
University of Pennsylvania
School of Medicine

* * *

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Andrew D. Hunt, M.D.
Professor
Department of Pediatrics and Human Development and
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Medical Humanities Program
Michigan State University
College of Human Medicine

Theodore R. LeBlang, J.D.
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Department of Medical Humanities
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E. A. Vastyan, L.H.D.
Professor and Chairman
Department of Humanities
Pennsylvania State University
College of Medicine

Fredric D. Burg, M.D. (Consultant)
Associate Dean for Academic Programs
University of Pennsylvania
School of Medicine

* * *

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February 26-27, 1981

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Robert A. Chase, M.D. Emile Holman Professor of Surgery Department of Surgery Stanford University School of Medicine Stanford, California 94305	Member, NBME Executive Committee
C. William Daeschner, Jr., M.D. Professor and Chairman Department of Pediatrics The University of Texas Medical School at Galveston Galveston, Texas 77550	Member, NBME Executive Committee Chairman, CQEP Steering Committee Member, Coordinating Committee for the CQE Prototype
William D. Mayer, M.D. President Eastern Virginia Medical Authority Post Office Box 1980 Norfolk, Virginia 23501	Vice Chairman of the NBME
John H. Morton, M.D. Professor of Surgery The University of Rochester School of Medicine and Dentistry 601 Elmwood Avenue Rochester, New York 14642	Member, NBME Executive Committee
Jack D. Myers, M.D. University Professor of Medicine University of Pittsburgh School of Medicine 1291 Scaife Hall Pittsburgh, Pennsylvania 15261	Honorary Member of the NBME Consultant on Basic Science Problem Solving for CQEP

Lawrence Scherr, M.D.
Professor and Vice-Chairman
Department of Medicine
North Shore University Hospital
Associate Dean
Cornell University Medical College
1300 York Avenue
New York, New York 10021

Member, CQEP Steering Committee
Member, Coordinating Committee for the CQE Prototype

Roy C. Swan, M.D.
Hinsey Professor of Anatomy
Cornell University Medical College
1300 York Avenue
New York, New York 10021

Member, NBME Executive Committee
Chairman, Task Force on the Basic Medical Sciences for CQEP
Member, Coordinating Committee for the CQE Prototype

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Bryce Templeton, M.D., M.Ed.
Principal Investigator
Comprehensive Qualifying Evaluation Program

Johanna J. Jones, M.A.
Project Director
Comprehensive Qualifying Examination

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Questionnaire Concerning the Competency Document

We would appreciate your taking time to complete this questionnaire. Your feedback will be helpful in improving the usefulness of the document to other medical educators and students. Your comments will not be regarded as a formal response and/or endorsement by the organization you represent. Signed or unsigned returns will be welcomed.

1. TERMS AND DEFINITIONS

Directions: If you feel there is a problem with terms or definitions in any part of the document, please specify the term or definition, check the type of problem, and describe your proposed modification.

Term or Definition	Problem				Proposed Modification
	Unclear	Inaccurate	Needs Expansion	Other: Specify	

Please Return To:

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2. HIGH IMPACT DISEASE AND CLINICAL PROBLEM LISTS

Directions: If you feel there is a problem with items in the High Impact Disease and Clinical Problem Lists, please specify the item, check the appropriate 'To Be Done' column, and describe your proposed modification or tell us why it should be deleted.

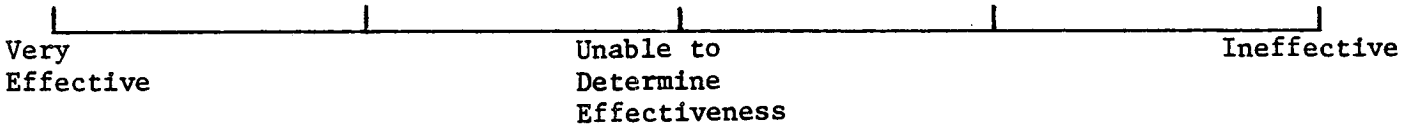
Item	To Be Done		Proposed Modification or Reason for Deletion
	Modify	Delete	

Are there other items you feel should be added to the High Impact Disease and Clinical Problem Lists? _____Yes, _____No.

If so, please specify, preferably with documentation of the reason for inclusion.

3. FORMATING OF EXAMPLES

Directions: Please rate the effectiveness of the formating of the competency statement examples. (pp 33-41)



If you judged the format ineffective, how would you suggest it be improved?

4. WRITTEN PARTS OF CHAPTERS I-IV

Directions: If you feel there is a problem with a paragraph or topic within a chapter, please specify the page number, and paragraph or topic, check the appropriate 'To Be Done' column, and propose a modification or document a reason for deletion. (It may be easier for you to make your modifications on your draft and send us a copy of each appropriate page.)

Page Number	Specific Paragraph or Topic	To Be Done		Proposed Modification or Reason for Deletion
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Are there specific topics you feel should be added to the text? _____Yes, _____No.

If so, please specify what they are, how they should be developed, and where they should be included.

5. EVALUATION OF THE COMPETENCY DOCUMENT

Directions: Please rate the usefulness of this document for:

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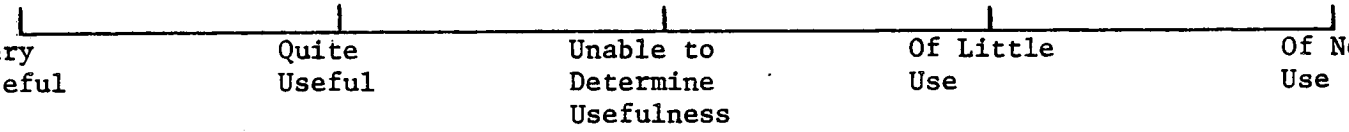

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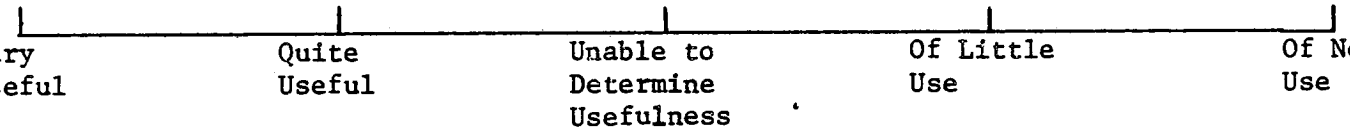

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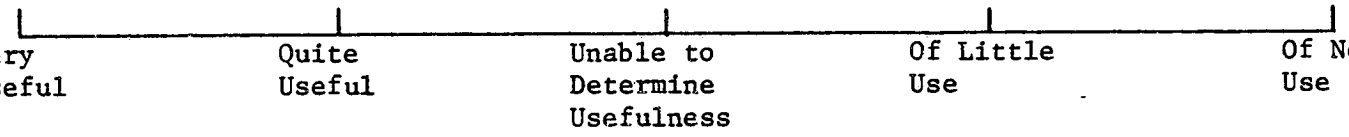

Any other comments about the competency document?

OPTIONAL	Name: Address: Phone:

C 4 5

association of american medical colleges

MEMORANDUM

March 10, 1981

TO: Council of Academic Societies

FROM: August G. Swanson, M.D.

SUBJECT: Single Route to Licensure

At the Council of Academic Societies Interim Meeting February 26 and 27, the proposal by the Federation of State Medical Boards to promulgate the implementation of a single route to medical licensure was presented. The proposal would require passage of an examination called the Federation Licensing Examination I (FLEX I) in order to enter graduate medical education and to pass a second examination called Federation Licensing Examination II (FLEX II) for a license for independent practice. The National Board of Medical Examiners is in the process of developing an examination to be used as FLEX I. Although the Board's Executive Committee is planning to continue to provide a diploma to graduates of medical schools accredited by the Liaison Committee on Medical Education if they pass National Board Exam Part I and FLEX I and FLEX II, the role of such a diploma as a credential for licensing is unclear.

To provide an opportunity for CAS representatives to communicate their views directly to Federation and NBME members, the attached roster is provided.

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University of California, Los Angeles
School of Medicine
Phone: (213) 825-8255

John W. Beeler, M.D.
Director
Department of Radiology
Winona Memorial Hospital
Indianapolis, Indiana
Phone: (317) 872-3971 or 923-8255

Council of Medical Specialty Societies

R. James Brenner, M.D.
Resident
Department of Radiology
University of California
Affiliated Hospitals
San Francisco
Phone: (415) 666-1723

American Medical Association Resident Physician Section

Lawrence S. Brown, Jr. M.D., M.P.H.
Intern
Department of Medicine
Harlem Hospital and Medical
Center, New York
Phone: (212) 694-1234

Student National Medical Association

Carmine D. Clemente, Ph.D.
Director
Brain Research Institute
University of California, Los Angeles
School of Medicine
Phone: (213) 825-5061

Association of American Medical Colleges

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Department of Psychiatry and
Behavioral Sciences
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Phone: (405) 271-5272

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Department of Pediatrics
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Phone: (919) 966-4427

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Robert C. Derbyshire, M.D.
Secretary-Treasurer
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Examiners
Phone: (505) 827-2215

Member-at-large

Angelo M. DiGeorge, M.D.
Professor Pediatrics
Temple University
School of Medicine and St. Christopher's
Hospital for Children, Philadelphia
Phone: (215) 427-5179

Test Committee Chairman

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Chairman
Department of Medicine
University of Minnesota
Medical School-Minneapolis
Phone: (612) 373-8202

Test Committee Chairman

Richard E. Flood, M.D.
Immediate Past President
The Federation of State Medical
Boards of the United States, Inc.
Phone: (304) 723-1130

Federation of State Medical Boards

Paul J. Fink, M.D.
Chairman
Department of Psychiatry and Human
Behavior, Jefferson Medical College
of Thomas Jefferson University
Phone: (215) 928-6912

Council of Medical Specialty Societies

Bryant L. Galusha, M.D.
Director of Medical Education
Charlotte Memorial Hospital
Charlotte, North Carolina
Phone: (704) 373-3146

Federation of State Medical Boards

David A. Gee
President
The Jewish Hospital St. Louis
Phone: (314) 454-7250

American Hospital Association

Harold S. Ginsberg, M.D.
Chairman
Department of Microbiology
Columbia University College of
Physicians and Surgeons
Phone: (212) 694-3647

Member-at-large

Fairfield Goodale, Jr., M.D.
Dean and Director
Medical College of Georgia
School of Medicine
Phone: (404) 828-2231

Test Committee Chairman

Joe S. Greathouse, Jr.
Iowa Health Systems Agency
Phone: (515) 247-8777

American Hospital Association

Ward O. Griffen, Jr., M.D.
Chairman
Department of Surgery
University of Kentucky
College of Medicine
Phone: (606) 233-6012

Test Committee Chairman

Rocio Huet-Rose
Medical Student
University of Michigan
Medical School
Phone: (703) 968-7920

American Medical Student Association

Harold G. Jacobson, M.D.
Chairman
Department of Radiology
Montefiore Hospital of the Albert
Einstein College of Medicine
Phone: (212) 920-4626

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Richard Janeway, M.D.
Dean
The Bowman Gray School of Medicine
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Phone: (919) 748-4424

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Phone: (203) 373-2723

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Department of Anatomy
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Phone: (804) 924-2731

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Glen R. Leymaster, M.D.
Executive Director
American Board of Medical Specialties
Phone: (312) 491-9091

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Marion Mann, M.D.
Professor of Pathology
Howard University
College of Medicine
Phone: (202) 636-6306

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Director of Education Services
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Phone: (202) 389-3829

Veterans Administration

Jack D. Myers, M.D.
University Professor of Medicine
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Phone: (412) 624-2649

Hononary Member

Frederick D. Neidhardt, Ph.D.
Chairman
Department of Microbiology
The University of Michigan
Medical School
Phone: (313) 764-1466

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Chairman
Department of Pharmacology
University of Miami
School of Medicine
Phone: (305) 547-6643

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Edward R. Perl, M.D.
Chairman
Department of Physiology
University of North Carolina
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School of Medicine
Phone: (919) 966-5241

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Thomas E. Piemme, M.D.
Director
Office of Continuing Medical
Education
The George Washington University
Medical Center
Phone: (202) 676-4285

Member-at-large

Colonel John C. Richards (MC), USA
Hawaii
Phone: (808) 433-5781

United States Army

C.H. William Ruhe, M.D.
Senior Vice President
American Medical Association
Phone: (312) 751-6750

American Medical Association

Henry Z. Sable, M.D., Ph.D.
Professor of Biochemistry
Case Western Reserve University
School of Medicine
Phone: (216) 368-3334

Test Committee Chairman

Jay P. Sanford, M.D.
Dean
Uniformed Services University of
the Health Sciences
School of Medicine
Phone: (202) 295-3013

Member-at-large

Lawrence Scherr, M.D.
Associate Dean Cornell University
Medical College and Director,
Department of Medicine
North Shore University Hospital
Phone: (516) 562-4310

Federation of State Medical Boards

Harry Schwartz, Ph.D.
Writer in Residence
Department of Surgery
Columbia University College of
Physicians and Surgeons
Phone: (914) 725-1642

Member-at-large

Sheldon Sevinor, M.D.
Plastic Surgeon
Lynnfield, Massachusetts
Phone: (617) 592-3632

Physicians National Housestaff
Association

Richard W. Stander, M.D.
Director of Education
American College of Obstetricians
and Gynecologists
Phone: (312) 222-1600

Member-at-large

Morton A. Stenchever, M.D.
Chairman
Department of Obstetrics and
Gynecology
University of Washington
School of Medicine
Phone: (206) 543-3045 or 3580

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Robert B. Stevens
President
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Phone: (215) 642-4742

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Rosemary A. Stevens, Ph.D.
Professor
Department of the History and the
Sociology of Science
The University of Pennsylvania
Phone: (215) 243-4225

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Louis W. Sullivan, M.D.
Dean and Director
The School of Medicine
at Morehouse College, Atlanta
Phone: (404) 688-4877 or 3119

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Arthur J. Vander, M.D.
Professor Physiology
The University of Michigan
Medical School
Phone: (313) 763-4477

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Joseph F. Volker, D.D.S., Ph.D.
Chancellor
University of Alabama System
Phone: (205) 348-6010 or 934-4784

Member-at-large

Robert L. Volle, Ph.D.
Associate Dean
Preclinical Education
University of Connecticut
School of Medicine
Phone: (203) 674-2385

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George D. Webster, M.D.
Vice President and Director
of Evaluation
American Board of Internal Medicine
Phone: (215) 243-1500

Test Committee Chairman

Herman Finch
Standard Oil Building
Chicago
Phone: (312) 856-1100

American Medical Association

Peter C. Whybrow, M.B., B.S.
Professor of Psychiatry
Dartmouth Medical School
Phone: (603) 646-3111

Test Committee Chairman

Harold E. Wilkins, M.D.
Past President
The Federation of State Medical
Boards of the United States, Inc.
Phone:

Federation of State Medical Boards

Edgar W. Young, Jr., M.D.
Associate Dean
Predoctoral Programs
University of Oklahoma
Health Science Center
Phone: (405) 271-2331

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Wallace T. Miller, M.D.
Professor of Radiology
The University of Pennsylvania
School of Medicine
Phone: (215) 662-3042

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REPORT OF THE
COUNCIL OF ACADEMIC SOCIETIES
INTERIM MEETING

February 26 - 27, 1981

Washington Hilton Hotel
Washington, D.C.

I. Call to Order

The meeting was called to order at 10:00 a.m. Dr. Daniel X. Freedman, Chairman presided. Sixty-two individuals from 51 of the 71 member societies were present.

II. President's Remarks

AAMC President, John A. D. Cooper was present to welcome the representatives to what he announced was the best attended Interim Meeting in the History of CAS. He stated that the high attendance rate was probably precipitated by the intense faculty interest in the topic of the meeting--the Federation of State Medical Board's (FSMB) proposal of a single route to licensure through FLEX I and II and the development by the National Board of Medical Examiners (NBME) of a Comprehensive Qualifying Examination (CQE) to serve as FLEX I. Dr. Cooper also welcomed officers and staff members from the NBME and FSMB who had been invited to the meeting to enlighten the attendees about the proposals and to answer questions about the planned changes.

Dr. Cooper stated a number of his concerns about the proposals and posed questions for further consideration. He disagreed with the proposition that examination for educational achievement in medical education and evaluation for licensure are separate and distinct and that licensure exams should not be used to evaluate educational achievement. He also expressed concerns about the specifications of the proposed CQE. He applauded the NBME's expressed objective to develop an exam that will go beyond factual recall in integrating clinical problem solving with the sciences basic to medicine. However, Dr. Cooper expressed the opinion that the exam appears to be directed toward testing knowledge in current or past medicine rather than providing an emphasis on knowledge that will be needed in the future practice of medicine. Dr. Cooper questioned the fate of the basic sciences under such an exam--particularly in this era of the new biology when the basic sciences are moving rapidly ahead of the clinical application of their findings.

In closing, Dr. Cooper expressed the hope that the faculty members present would leave the meeting with a better understanding of the proposed changes and that they would take advantage of the opportunity to make their views and suggestions known to the NBME and FSMB representatives.

III. Chairman's Remarks

Dr. Freedman provided historical background on the relationship between the AAMC, the Federation, and the National Board. He stated that both the AAMC and the Federation had participated as founders of the Board in 1915 and that the three organizations together had striven to improve medical education and upgrade standards for medical licensure. He stated that of the three AAMC councils, the CAS has been particularly involved with the NBME as it is the faculty of the nation's medical schools who serve on test committees and devote personal time and effort to assuring the high quality of the Board's examinations.

Dr. Freedman stated that medical school faculties and medical licensing boards have separate responsibilities---respectively, to educate physicians and to assure physicians' competence to practice medicine. He cautioned that passage of a written examination cannot be considered a credential equivalent to graduation from an LCME accredited medical school. For this reason, he stated the opinion that conceptually, a single route to licensure as advocated under a FLEX I-II sequence never has and never can exist.

Regarding the Comprehensive Qualifying Examination, Dr. Freedman stated that the NBME Goals and Priorities (GAP) Committee (which proposed the CQE in 1973) could not have anticipated two major changes in the last eight years which have substantially diminished the need for the exam: (1) the improvements in the accreditation process for graduate medical education resulting from the establishment of the Liaison Committee on Graduate Medical Education, and (2) the end of an era of rapid medical school expansion. He offered these examples of the changing nature of medical education and medical practice as evidence that the CQE proposal may require review and reassessment.

In closing, Dr. Freedman expressed the hope that in the future, as medical schools and teaching hospitals focus on the improvement rather than the expansion of their programs, the faculties, licensing boards, and National Board can continue their close association so that the increasing quality of medical education and medical care can continue.

IV. Plenary Session

A. Evolution of the Examination Process for Medical Licensure - the FLEX I-II Plan

Dr. Bryant L. Galusha, President-Elect of the Federation of State Medical Boards reviewed the Federation's historic role in improving the standards for medical licensure in this country. Dr. Galusha stated that he was pleased to have an opportunity to discuss the FLEX I-II sequence as the FSMB considered the implementation of the Federation Licensing Examination (FLEX) in the '70s to be one of its major accomplishments. He explained that the Federation is now proceeding toward having its constituent licensing boards require all graduates of both domestic and foreign schools seeking licensure in the United States to pass a sequence of two examinations. The first exam, FLEX I, would be

administered at the interface between undergraduate and graduate medical education, passage of the examination would be a prerequisite to entering a residency training program. Passage of the second examination, FLEX II, would be required for an unrestricted license to practice medicine. Dr. Galusha stated the opinion that a single route to licensure is necessary because the state medical boards have a legal responsibility to protect the public from unsafe medical practice in a supervised as well as an unsupervised setting.

B. The Comprehensive Qualifying Examination (CQE)

Dr. William Daeschner, Jr., Chairman of the CQE Steering Committee, reviewed the history of the examination's development. Dr. Jack Myers, Consultant to the NBME on basic science problem solving, reviewed the efforts by the NBME to develop clinically relevant basic science test questions. Dr. Roy Swan, Chairman of the NBME Task Force on Basic Sciences for the CQE, discussed the NBME's effort to have clinicians and basic scientists collaborate in the development of new test items.

Bryce Templeton, Project Director for the Comprehensive Qualifying Evaluation Program, discussed the actual content of the CQE. He stated that the content of the examination is derived from a 50 cell matrix composed of five abilities to be evalualted in the context of 10 tasks. Only 12 of the cells in the matrix are amenable to evaluation by written examination. The remaining 38 which involve interpersonal skills, technical ability, and work habits and attitudes, must be evaluated by direct observation of students by faculty in the educational setting.

C. AAMC Clinical Evaluation Project: Implications for Assessment at the Interface

Xenia Tonesk, Ph.D. of the Division of Educational Measurement and Research of the AAMC presented findings derived from the Association's three-year study of the evaluation of clinical clerks. The text of her remarks is attached as Addendum 1.

V. Discussion Sessions

CAS Representatives and Representatives of the Federation and National Board were divided into four groups for informal discussions of the Comprehensive Qualifying Examination. At the small group sessions, the National Board provided a sample of 330 CQE questions explaining that the questions were a limited but representative sample of the planned content.

VI. Reconvene

A. Reports from the Discussion Group Leaders

1. Dr. William F. Ganong reported that after reviewing the CQE sample questions, his group unanimously agreed that the basic science material in the examination was not adequate in either quantity or quality. The group also agreed that the examination did not adequately

test knowledge of the new developments in the basic science fields and that this was a serious omission in view of the important clinical relevance these advances would have in the very near future. In view of these deficiencies, it was agreed that it would be very important for the National Board to continue the Part I examination or an equivalent so that basic science knowledge could still be tested at the end of the second year. Consequently, the group endorsed an NBME Executive Committee proposal that the National Board support certification consisting of NBME Part I, FLEX I (CQE), and FLEX II.

Regarding the timing of the CQE, Dr. Ganong stated that his group did not reach a definite consensus. However, there was general agreement that it should be administered prior to graduation from medical school. He stated that there had also been some debate about the timing of FLEX II as some members of the group felt that it was unrealistic to expect trainees to pass a comprehensive examination of fundamental knowledge after two or more years of highly specialized residency training.

2. Dr. Joseph E. Johnson stated that concerns about the inadequate testing of the basic sciences in the CQE had surfaced fairly early in his group's discussion as well. He stated that the group was disappointed that there were only about 10 or 15 of the questions integrating the basic and clinical sciences which Dr. Swan has previously discussed.

Dr. Johnson reported that his group had also considered the timing of the examinations. The group was concerned about the effect the timing of FLEX I could have on fourth year students--particularly those who were matched to a residency program and subsequently notified that they had failed FLEX I.

Dr. Johnson reported that his group agreed that the discontinuation of NBME Part I would have severely adverse effects on the viability of the basic sciences in medical education and on subsequent medical practice. The possible dependence of medical schools on licensing boards to maintain academic rigor was seen as a possible--and extremely undesirable--outcome of the proposed changes. That examinations often drive medical school curricula was an accepted fact among the members of the group; that licensing examinations, rather than the National Boards, could play such a role in the curricula was viewed by the group as inappropriate. Most members of the group had expressed the opinion that the majority of faculty members at their institutions would not accept these proposals absent a commitment by NBME that Part I would continue to be provided and could remain an essential link in the educational process.

3. Dr. Hill reported that his group had been similarly concerned with the de-emphasis of the basic sciences under a FLEX I-II sequence with the CQE serving as FLEX I. The group had unanimously and enthusiastically supported the NBME Executive Committee proposal that NBME Part I could be maintained in addition to FLEX I and II. However, the group noted that the details of such an arrangement would have to be examined carefully. They questioned whether the content of the CQE would change if Part I remains and agreed that satisfactory resolution of such issues would require substantial faculty involvement.

Dr. Hill expressed the opinion that his group had had a very positive interchange with the members of the Board and Federation who were present. The group had applauded the Board's attempts to create innovative questions but suggested increased faculty involvement in the effort. The group urged the Board to produce a true prototype of the CQE--rather than just sample questions--for evaluation by faculty members.

4. Dr. T. R. Johns stated that his group had been impressed with the quality but not the quantity of the integrative questions on the basic and clinical sciences. Other special questions regarding patient management had been viewed favorably. However, the group had agreed that overall, the basic science questions were not as challenging as the NBME examinations and the clinical questions, not as difficult as FLEX. It was felt that this had serious implications in terms of the growing influx of foreign medical students.

Dr. Johns stated that the group considered many of the issues which the other groups had reportedly discussed--the role of the basic sciences and the importance of maintaining NBME Part I. In addition, Dr. Johns raised a question which his group had discussed in detail: What is the need for the CQE? It had been pointed out that in granting the M.D. degree, medical school faculties are attesting that graduates of their schools are prepared to enter graduate medical education and competent to practice medicine in a limited setting. The group felt that the present NBME sequence as well as the FLEX examination could be improved upon but failed to see the necessity for such broad changes.

B. Discussion

The floor was opened for discussion. The question was raised of how long the NBME will control the content of the CQE if it is being developed in part for the Federation's use as FLEX I. Doubt was expressed that continuation of NBME certification alone would protect the interests of the basic sciences or of the National Board itself under FLEX I and II system. Suggestions of possible ways to maintain emphasis on the basic sciences as well as to protect the viability of the National Board were: (1) that the LCME consider encouraging schools to administer NBME Part I, and (2) that program directors be urged to require passage of the examination as a prerequisite to entering their programs. It was agreed that these requirements might also be helpful in screening out foreign medical graduates who do not have adequate basic science knowledge.

At the close of the discussion, Dr. William Holden, Chairman of the National Board, thanked the CAS representatives and the AAMC staff for the opportunity to attend the meeting and stated that the views expressed at the meeting would be kept in mind in future deliberations regarding the CQE.

VII. Adjournment

The meeting was adjourned at 12:30 p.m. The next CAS Meetings will be held on November 1-2, 1981 in Washington, D.C.

AAMC Clinical Evaluation Project:

Implications for Assessment at the Interface*

In discussing the proposal of the Federation of State Medical Boards (FSMB) to promote a single route to licensure through the FLEX I - FLEX II Examination sequence and the development by the National Board of Medical Examiners (NBME) of a Comprehensive Qualifying Examination (CQE) to serve as FLEX I, there emerges a fundamental issue that needs to be addressed. Is there a need for assessment at the interface between undergraduate and graduate medical education (Figure I)? Some question the need, arguing that if the MD degree granted by an accredited institution has validity, then such assessment is already taking place. Nevertheless, for purposes of discussion, let us assume there is need for assessment at the interface. What, then, is to be assessed?

The NBME proposal for a Comprehensive Qualifying Evaluation Program (CQEP) distinguishes two areas: 1) qualities measurable by a written examination (Figure I, A); 2) characteristics and qualities requiring other methods of assessment (Figure I, B).

Some of the content in the first area is now assessed through the NBME Part I, II, III or FLEX sequence (Figure I, A1). How is the newly proposed CQE different from what is currently in use (Figure I, A2)? Will it be comparable in depth and range of coverage for both basic and clinical sciences? Will separate measures of achievement in various content areas (Anatomy, Pediatrics, etc.) be available as now? Will an index of ability to apply knowledge to diagnostic and management problems be available as a separate measure, as it is now in Part III? These and other questions need to be addressed in order to evaluate the proposal.

The second area, characteristics and qualities evaluated by methods other than a written examination, is assessed as part of the degree granting process by ratings from clinical faculty (Figure I, B1). Ratings by faculty using a standardized uniform rating process comprise the major proportion of the proposed methods to be used by the NBME to assess this area for licensure (Figure I, B3). Other methods to be developed by the Board include simulations, interaction analyses, etc. (Figure I, B2). In fact, standardized ratings by faculty are also to be used to supplement the proposed CQE (Figure I, A3).

The AAMC Clinical Evaluation Project, now in its third year, has addressed the problems of evaluating clerks and residents by clinical faculty. Through the project we have gathered experience and information that may be relevant in discussing the NBME proposal. The information comes from clinical faculty from 495 departments in six disciplines (Internal Medicine, Pediatrics, Surgery, Obstetrics/Gynecology, Psychiatry, and Family Medicine) who furnished

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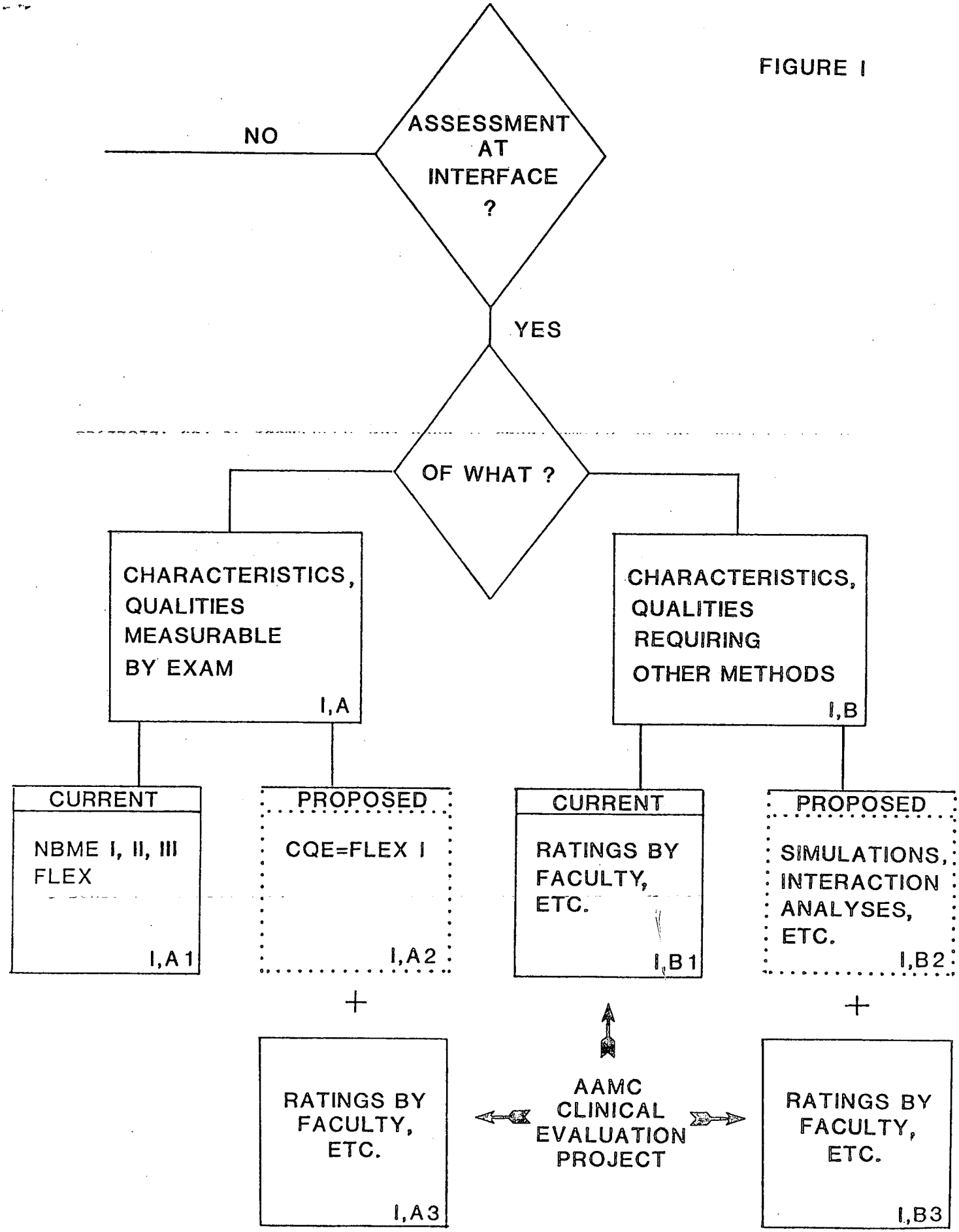
* Summary of presentation by Xenia Tonesk, Ph.D. to the Council of Academic Societies Interim Meeting at the Washington Hilton Hotel February 26, 1981.

FIGURE I



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copies of rating forms and other instruments used in evaluating clerks and residents and shared with us their views, concerns and problems they encounter in clinical evaluation. Our experience also includes site visits to a number of schools and facilities, and extensive discussions of the problems of clinical evaluation at various national and regional meetings, study groups, committees, etc.

The AAMC project was started precisely with the expectation that there may be some one best way, some optimal combination of methodologies, to assess performance and qualities. It is clear that faculties generally are not satisfied with the job they now do in evaluating clerks in a clinical setting. As we progressed with the project, however, we became convinced that the forms, the scales, the methodology are not the real source of dissatisfaction and concern. What is at issue, rather, is the quality of information, its meaningfulness and usefulness, irrespective of the method by which it is collected, recorded or summarized. There are several reasons why this is so.

1. The majority of the students are readily categorized by the faculty into superior, adequate, and inadequate groups. It is the marginal students, especially at the lower end of the continuum, that frustrate the faculty the most. Here, documentation is crucial and the faculty do spend much time and effort in order to arrive at judgments on how transitory or permanent the problems are, how remediable or invincible the shortcomings are, etc. But such extensive effort is unwarranted with the majority of the students and is even counterproductive if applied and required in every case.

2. No one system of assessment appears suitable for all contexts. Specialty/discipline differences, variations in hospital/clinic settings, degrees of familiarity with each student by the evaluator, varying roles of the clerks (active member of the health team, or passive learner/observer), even differences in institutional and departmental philosophies have to be accommodated if meaningful information is to be collected. No single standardized process of assessment can fit these varying situations.

3. A very practical consideration is one of faculty and staff time required for assessment. Learned content is assessed at the cost of the student's time; he or she can reasonably be expected to spend a day or two taking a special examination. With many students to assess, how can ratings be made at once efficiently administerable and yet meaningfully comprehensive? Areas to be assessed (ethical behavior, interpersonal skills) are extensive, complex, multifaceted. Elaborately articulated global scales tend to have low reliability. Specific behavioral observations, on the other hand, are reliable, but they trivialize the substance. Thus, either accuracy or meaning is lost.

4. Assessment of these characteristics at any given point in time is apt to be incomplete. Areas such as fund of knowledge and technical proficiency accumulate over time and can, therefore, be measured at any

stage as to the level attained. But many other qualities manifest themselves very differently. Some do not even appear at the clerkship level (e.g., supervisory ability, independent decision-making, ability to teach, to delegate) but are very important later. Others are only meaningful from the perspective of the continuing development of the student through medical school and graduate medical education. Such a historical, longitudinal perspective is supplied by the faculty in an informal way, but cannot be meaningfully reflected in any formalized assessment procedure.

5. Assessment at the interface implies a certain minimum level of attainment, a minimum standard to be "passed." For some qualities, e.g., ethical behavior, a minimum standard is a contradiction in terms. As important as the positive demonstration of responsible, humane, professional conduct is the lack of instances of irresponsible, unprofessional conduct, lack of poor judgment, insensitivity, negligence, etc. The practical question is not one of sufficient qualification, but one of confidence that there are no disqualifying faults. The limitations of any formalized psychometric procedure are very severe when it comes to the detection of the absence of disqualifying characteristics.

Based on our experience with the Clinical Evaluation Project, we are planning to hold three workshops in the Spring of 1982 which will provide a forum for faculty to address some of these issues with regard to their particular departmental needs.

As long as institutions, departments, faculties, educational settings vary, clinical evaluation, to be meaningful, must remain in the hands of the faculty and has to be tailored at the departmental level. We are persuaded that such an individually tailored approach, rather than a search for a single standardized system, will prove more productive in raising the overall quality of clinical evaluation.

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LEGISLATIVE UPDATE
COUNCIL OF ACADEMIC SOCIETIES
INTERIM MEETING

FEBRUARY, 1981

Dr. John Sherman, Vice-President of the AAMC, was present to provide an overview of the new Congress and the Administration. He stated that the Reagan Administration and many of the new, inexperienced Members of Congress were likely to support stringent cuts in government spending which would likely impact on the medical schools and their research programs. He urged that CAS Representatives remain abreast of these changes by paying close attention to the Weekly Activities Reports, the CAS Brief, CAS Alerts, and the pink Assembly memoranda.

Dr. Sherman also reported that the Office of Management and Budget had published in the Federal Register a proposed revision of OMB Circular A-21 that would enable institutions to include in their indirect cost pools a charge for independent research and development. The charge would be limited to 1% of the modified total direct costs of sponsored research. At the January meeting, the CAS Administrative Board and AAMC Executive Council had supported the concept of support for independent research and development, but opposed this particular mechanism for two reasons: (1) it might endanger the BRSG program, and (2) it might lessen the biomedical research community's credibility with a Congress that is becoming increasingly sensitive to rising indirect costs.

Ms. Diane Plumb reported on President Reagan's budget plan in which the Administration voices support for biomedical research but in fact goes beyond the Carter level for 1981 rescissions of research funding and limits growth in 1982. She reported that the budget particularly advocated drastic cuts for the programs of the Alcohol, Drug Abuse and Mental Health Administration. The Budget also cites the GMENAC Report figures in its argument for eliminating capitation support in FY 1981 and FY 1982. She also reported that reductions in the Guaranteed Student Loan program would force students to rely more on the Health Education Assistance Loan program which has a very high interest rate and will result in a dramatic increase in student indebtedness levels.

Dr. Thomas Morgan reported that the new Congress is likely to support legislation which would increase competition in the health care system. He stated that a competitive market would alter the function of academic health centers in this country in that it would reduce their ability to devote funds to medical education and research and would drastically affect their ability to care for the disadvantaged. Dr. Morgan also reported that the National Research Service Award program will be up for renewal in May and urged CAS Representatives to communicate their views on this legislation to their respective Congressional Representatives.

Dr. August Swanson provided updated information on the truth-in-testing battles being waged in some of the state legislatures. He also announced that the AAMC would be embarking on an extensive study of the undergraduate medical education of physicians.

CAS INTERIM MEETING SCHEDULE

Thursday, February 26

10:00 a.m. - 12:30 p.m.	Plenary Session
12:30 p.m. - 2:00 p.m.	Luncheon
2:00 p.m. - 3:00 p.m.	Introduction of Discussion Group Topics
3:00 p.m. - 5:00 p.m.	Discussion Groups

Friday, February 27

9:00 a.m. - 12:00 noon	Meeting and Discussion Group Reports

A PROPOSAL TO ESTABLISH A SINGLE ROUTE TO MEDICAL LICENSURE WILL BE THE FOCUS OF THE CAS INTERIM MEETING

A single pathway to medical licensure is being proposed by the Federation of State Medical Boards. This pathway would consist of passing an examination (Federation Licensing Examination I) for preliminary licensure to permit entry into graduate medical education, and the later passing of a second examination (Federation Licensing Examination II) for an unrestricted license to practice medicine. The National Board of Medical Examiners, which has been developing a Comprehensive Qualifying Examination (CQE) anticipates that the Federation will adopt the CQE as FLEX I. Both the Federation and the Board expect to phase out National Board of Medical Examiners certification through the NBME Part I, II and III examination sequence as a route to licensure.

Several questions are raised by these proposals:

1. Will a single route to licensure with a national examination required at the interface between undergraduate and graduate medical education inappropriately restrict or constrain curricular diversity?
2. Will curricular and instructional innovation be inhibited?
3. Will the removal of certification authority from the National Board of Medical Examiners make its basic science and clinical subject area examinations less valuable to faculty for educational evaluation?
4. Will faculty representatives be less interested in serving on NBME test committees if the Board is perceived primarily as a testing agency providing examination services to the Federation and its constituent state medical licensing boards?
5. How will a single route to licensure, with examination policies controlled by the Federation of State Medical Boards, affect the influx of U.S. citizens who have been educated in foreign medical schools?

These and other questions will be explored at the CAS Interim Meeting. Representatives of both the Federation and the Board are being invited to attend and members of the AAMC's External Examinations Review Committee will also attend.

PROMOTION

aamc association of american medical colleges

ANNOUNCEMENT OF IMPORTANT AAMC - CAS MEETING DATES

PLEASE MARK YOUR CALENDARS NOW - 1981

1981 Council of Academic Societies Interim Meeting - February 26-27

The meeting will be held at the Washington Hilton Hotel beginning at 10:00 a.m. on Thursday, February 26 and adjourning at 12:00 p.m. on Friday, February 27.

(See inside for further details)

1981 Council of Academic Societies Fall Meeting - November 1-2

The meeting will be held at the Washington Hilton Hotel and, following the customary fall meeting format, will begin in the mid-afternoon on Sunday, November 1 with a plenary session followed by discussion groups. The annual business meeting will be held on Monday, November 2 from 1:30 to 5:30 p.m.