HIGHLIGHTS

2006 Highlights

Comprehensive Review of USMLE
In 2006 an external working group, the Committee to Evaluate the USMLE Program, was appointed to undertake a comprehensive review of the USMLE program. Information gathering through surveys and focus groups among a broad range of stakeholders was used to prepare for the first meeting of this committee in November 2006. It will examine the impact of the current USMLE and the role of the program in the future. The committee's recommendations will be presented to the NBME Executive Board in early winter 2008 and to the National Board at a subsequent Annual Meeting. For more information on this review, see page 46.

Customized Assessment Services
The NBME expects to introduce customized basic science assessments for use in the pre-clinical medical school curriculum during academic year 2007-2008. The Customized Assessment Services program will eventually make it possible for faculty members at medical schools to use the Internet to assemble tests from NBME item pools for use in undergraduate medical education and define the scores and subscores to be reported. These computer-based tests will then be administered over the Internet in the school's computer lab or on students' laptops, with scores calculated at the NBME and reported via the school's secure NBME website. For more information on Customized Assessment Services, see page 19.

Services to Health Professional Organizations
The Executive Board reviewed a comprehensive strategic analysis of the NBME's services for healthcare organizations and in fall 2006 directed staff to develop more specific business plans and timelines for expanding the NBME's services to client organizations. These initiatives are likely to require investment to adapt systems developed for large examination programs like USMLE to smaller, more customized applications. For more information on these services, see page 22.

Research Oversight at the NBME
In 2006, the NBME Research and Development Steering Committee conducted a careful review of NBME research activities at both a strategic and tactical level. This review was led by a research review group comprised of NBME staff members who are active researchers. See page 34 for a summary of the results of the review, including a series of recommendations regarding oversight of research at the NBME.

Standardized Patient Test Development Workshop
The NBME held a new faculty development workshop on standardized patient (SP) test development at the NBME offices in Philadelphia in September 2006. The workshop was intended for medical school faculty to learn how to design SP material for teaching and assessment purposes. The workshop trained participants in the key elements of SP test development, including examination blueprinting, case format, principles of good checklist development, and standard setting. During the workshop, participants had the opportunity to prepare patient scenarios and checklists, and to review and critique their material with other participants and workshop faculty. For more information on the workshop, see page 22.

NBME Staff
In February 2006, the NBME announced the appointment of John T. Wosnitzer to the newly created position of senior vice president for operations. In this new position, Mr. Wosnitzer serves as coordinator of the NBME's senior management team and acts in the stead of the president, Donald E. Melnick, MD, when Dr. Melnick is not in the office. At the time of his appointment to this position, Mr. Wosnitzer had been on the staff of the NBME for more than 30 years, including service as Chief Financial Officer. Also in February 2006, Mr. John J. Hinke, Jr, CPA was promoted into the new role of Director of Financial Services, taking on responsibility for all routine financial services, including purchasing and contracting.

In May 2006, Dr. Ann Jobe joined the staff of the ECFMG-NBME Clinical Skills Evaluation Collaboration (CSEC) as its new executive director. Dr. Jobe has had a distinguished career in academic medicine and has been an advocate of clinical skills assessment.

In 2005 and 2006, the NBME implemented a Process Enhancement Program (PEP). With the support of a consultant, small groups of staff were trained using a customized version of Six Sigma methodology, and PEP pilot projects were undertaken. The recommendations resulting from the pilot projects were implemented in 2006, and training and work on new projects is ongoing. PEP affects multiple units and programs of the NBME.

In 2006 the NBME Executive Board approved the construction of a nine- or 10-story addition to the NBME headquarters building at 3750 Market Street. After exploration of other options by staff, the Executive Board approved the new wing as the best choice for the long-term space needs of the organization. Construction is scheduled to commence early in 2007, with occupancy in late 2008 or early 2009.

Senior Management Team: (from left standing) Robert M. Galbraith, MD, Ronald J. Nungester, PhD, Stephen J. Lopez, PhD, Donald E. Melnick, MD, John T. Wosnitzer, Joe E. Crick, EdD, Stephen G. Clyman, MD, David B. Swanson, PhD; (from left seated) Richard E. Hawkins, MD, Shelley Z. Green, JD, Peter V. Scoles, MD, Barbara L. Davidson, PhD and John J. Hinke, Jr, CPA

NBME GOVERNANCE

NBME Governance

National Board Membership and Committees

The membership of the National Board consists of approximately 80 individuals, with accountability and expertise in the health professions and medical education and evaluation. These individuals are representatives of NBME test committees; representatives of national professional organizations; and members-at-large representing various interests, including the public. The National Board membership also includes the individuals who serve on the board of directors of the NBME, known as the Executive Board. It consists of the elected officers of the National Board (chair, vice chair, and treasurer), president, past chair, and five additional Executive Board members elected by the National Board. The Executive Board usually meets quarterly throughout the year, while the National Board meets annually, typically in March.

At its Annual Meeting, the membership of the National Board exercises its authority by reviewing the activities of the NBME, establishing policy for the organization after recommendations are received from the Executive Board, ratifying the annual operating and capital budgets, ratifying all important actions taken by the Executive Board since the last Annual Meeting, and electing at-large members and members of the Executive Board.

Standing committees and special committees as may be required to promote the objectives and interests of the NBME provide additional advice on programs and initiatives to the Executive Board and the full membership of the National Board.

2006 NBME Annual Meeting

The National Board of Medical Examiners met for its Annual Meeting on March 23-24, 2006 in Philadelphia. Approximately 130 National Board members, guests, and staff participated in the Annual Meeting, which included plenary presentations and business sessions, small group discussions, and the presentation of the 2006 John P. Hubbard Award.

The Board endorsed Executive Board appointments of representative members of the National Board made during the past year. Chair Laurence B. Gardner, MD and President Donald E. Melnick, MD focused attention on the many accomplishments of the past year. Treasurer W.T. Williams, Jr, MD and Chief Financial Officer John T. Wosnitzer reviewed financial performance in 2005 and the 2006 budget. Rhoda H. Karpatkin, JD, president emeritus of Consumers Union, provided a keynote address regarding the perspective of the non-medical public on the role of the NBME. James N. Thompson, MD, president of the Federation of State Medical Boards (FSMB), provided an overview of the recommendations emerging from two summits held in 2005 regarding physician accountability for continuing physician competence.

Each member and guest participated in eight small group discussions. These small group discussions provided an opportunity to discuss activities of the National Board. Summaries were captured from each small group discussion on whiteboards for review at subsequent plenary sessions. The topics for each of the eight small groups were: "state of the board" with the chair and president; report of the treasurer and any related financial issues; the international collaborations program and specific projects in this area; reports on the USMLE program; reports on the Post-Licensure Assessment System and client programs; reports on medical school and student programs; reports on research and development, including the Stemmler Medical Education Research Fund, NBME Research Days, and the Center for Innovation; and strategic planning discussion of suggestions made by Ms. Karpatkin regarding ways to increase participation of the public in the NBME and what part the NBME should play in the new competency assurance efforts described by Dr. Thompson. In plenary sessions subsequent to small group discussion, the Board ratified amendments to the NBME Bylaws, endorsed important actions of the Executive Board taken since the 2005 Annual Meeting, ratified the 2006 operating and capital budgets and endorsed other fiscal actions of the Executive Board, and endorsed actions related to USMLE and Center for Innovation projects.

The Board received the report of the 2006 Nominating Committee and elected two members-at-large to second four-year terms. The NBME's Distinguished Service Award was presented to retiring Board members Betsy D. Bennett, MD and Nancy S. Hardt, MD.

2006 Hubbard Award

The 2006 Hubbard Award Recipient, Reed G. Williams, PhD

During the Board's annual luncheon, the 2006 Hubbard Award was presented to Reed G. Williams, PhD of Southern Illinois University School of Medicine.

In presenting the award, Dr. Cyril Grum, Hubbard Award Committee chair, stated: "Dr. Williams has made outstanding contributions to the field of evaluation in medicine through his work to measure clinical competence using objective, scientific methods. He has a long and impressive record in the development of evaluation methods and measurement techniques focusing on

assessment of clinical competence. Dr. Williams is a nationally recognized leader in the use of standardized patients for teaching and assessment and was among the pioneers of the deployment of standardized patients for large-scale assessment purposes. His contributions to medical evaluation are multi-faceted, exemplified by the assessment of cognitive competencies of clinical reasoning through the use of written and computer-based simulations and performance assessment by multiple-station examinations and standardized patients.

"Dr. Williams has made, and continues to make, outstanding personal contributions to basic or applied research in the creation or improvement of assessment methodology. He is noted for advocating the assessment of competence in authentic clinical environments. He has broadened the traditional concepts of reliability and validity with his research of performance assessment in the clinical environment and studies investigating the measurement properties of assessment instruments. Over the past five years Dr. Williams has concentrated on a program of research designed to assist in improving the design and appropriate use of traditional clinical performance rating procedures for evaluating residents and students.

"Dr. Williams has fulfilled a number of strategic roles at an organizational level, and his record includes world-wide service as a consultant to medical schools and national organizations which drew on his expertise in developing education and assessment programs based on standardized patients. Dr. Williams' contributions and influence are also notable in all he has done to guide students and colleagues. He is described as an outstanding example of teacher, mentor, and friend. Everyone that comes into contact with Dr. Williams is impressed by his generosity, humility, intelligence, eloquence, and willingness to give of his time and expertise. Dr. Williams has made significant and enduring contributions to the field of assessment, and his achievements throughout his career clearly embody the spirit of the Hubbard Award."

In making its selection, the 2006 Hubbard Award Committee noted Dr. Williams' long career and accomplishments, his basic measurement work in performance-based testing and focus on assessment of clinical competence, his scientific papers reporting empirical studies of measurement properties of assessment instruments mostly in relation to reliability and validity, the practical application of results of his research, including his pioneering work in use of standardized patients, and his continued studies emphasizing application of direct observation in clinical environments for assessment at the workplace. Dr. Williams' high standards and extensive record of research attest to his outstanding abilities and dedication, with over 60 publications on the topics of education and assessment.

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SERVICES

Services for Medical Schools and Students

Services for Medical Schools and Students
The Medical School and Student Services unit provides a number of assessment services globally to medical schools and students. In 2006, a new milestone was achieved: More than 200,000 assessments were provided to medical schools and students through the subject examination program and self-assessment services. The report that follows describes details regarding these assessment programs, provides an overview of NBME medical school liaison activities, and highlights the new initiatives and enhancements for assessments and other services for medical schools and students.

Subject Examination Program
The NBME developed the medical school subject examination program during the early 1960s to meet the need for standardized examinations that could be used to measure achievement in the traditional basic and clinical science disciplines and to compare student performance with a national reference group of US and Canadian medical students. These examinations are available globally to medical schools and other institutions with a legitimate interest in the education of physicians or other health professionals. All institutions using these examinations must comply with test administration standards, including security provisions.

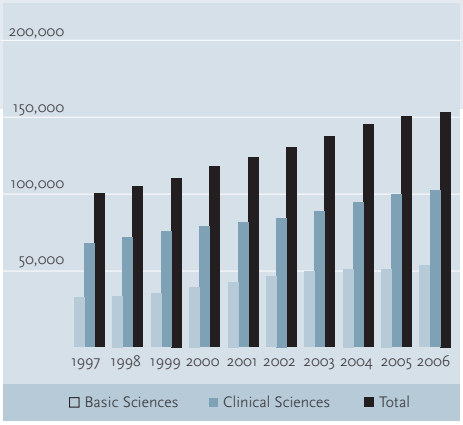
The NBME subject examination program currently provides subject tests to all of the 125 US medical schools accredited by the Liaison Committee on Medical Education (LCME), to eight Canadian medical schools, five osteopathic medical schools, and 19 schools or institutions outside the United States, Puerto Rico, and Canada.

As shown in Exhibit A, the subject examination program continues to experience growth. In 2006, the total number of subject examinations administered was 162,106: 59,504 in the basic sciences and 102,602 in the clinical sciences. Subject examinations are developed in 16 discipline areas covering nine basic science and seven clinical science disciplines. These examinations are appropriate for administration at the end-of-course or end-of-clerkship assessments. Additional examinations serve specific assessment needs. For example, the Introduction to Clinical Diagnosis Examination is designed to assess student performance at the end of history taking and physical diagnosis courses.

The Comprehensive Basic Science Examination and the Comprehensive Clinical Science Examination are general, integrated achievement tests covering material typically learned during basic science education and core clinical clerkships. These examinations reflect the content of USMLE Step 1 and Step 2 CK, respectively.

The Step 1 and Step 2 CK Committees acting in their capacity as the NBME discipline test committees, are responsible for oversight of the subject examination program. Drafts of the examinations are reviewed and approved by the appropriate chair (or designee). In keeping with USMLE practice, test designers have increased emphasis on application of knowledge rather than recall of isolated facts. Clinical science items are framed in the context of clinical vignettes, and this is increasingly true for the basic science disciplines. Content outlines and other information related to the subject examination program are available at the NBME website (http://www.nbme.org).

Exhibit A



Web-Based Score Reports and Analytical Reports
Medical schools and other institutions that use subject examinations are able to download scores and analytical reports. The schools have direct access to the scores and reports on the website, which assists schools in processing and disseminating scores and reports to faculty and departments. Access is restricted to a maximum of three individuals at each medical school. Scores are posted twice daily along with the routine enclosures.

The NBME provides analytic reports for the subject examination program to support the educational assessment needs of medical schools. The following highlights provide an overview of the analytical services:

Performance Profiles for the Comprehensive Subject Examinations
The NBME provides medical schools with performance profiles for individual students taking the Comprehensive Basic Science and Comprehensive Clinical Science Examinations. The performance profile is provided to students as an aid in self-assessment and is similar to the score reports that students receive for USMLE Step 1 and Step 2 CK. The score reports for the comprehensive examinations provide approximate performance equivalents for the USMLE Step 1 and Step 2 CK examinations. Subject examination scores on the Comprehensive Basic Science and Comprehensive Clinical Science Examinations can be translated to the scale used for USMLE Step 1 and Step 2 CK.

Summary Report of Performance for the Comprehensive Examinations
Medical schools receive an aggregate report on student performance in different content areas for the comprehensive subject examinations. This report is provided to schools when the examination is administered to 15 or more students.

Performance Reports for Content Categories and for Calendar-Specific Norm Group
Medical schools are provided with annual reports containing information on performance for the major content categories in each clinical subject examination. Summary performance information is included for all examinees from the current academic year. It is common knowledge that scores in certain clinical exams are progressively higher for students of equivalent ability who take the relevant rotation later in the academic year. National norms are provided for each quarter as well as the entire academic year. The report also provides information regarding the performance of comparison group examinees by the most common clerkship lengths among students taking the test. This information is helpful in evaluation of curriculum and other relevant educational issues.

Grading Guidelines for the Clinical Science Subject Examinations

The NBME provides schools that administer the clinical science subject examinations with guidelines for analyzing student performance. These guidelines assist clerkship directors in determining passing and honors grades for their students. Periodically, the NBME facilitates a review of the guidelines with faculty members and updates them to assure their continued appropriateness.

Keyword Phrase Item Analysis

A keyword phrase item analysis report is provided to schools for any subject examination with 10 or more examinees. Item analysis data and keyword phrase descriptors of the items, when reviewed together, provide an opportunity to study the extent to which examinees know the content of individual items.

Enhancements to the Subject Examination Program

Online Ordering System for Subject Examinations

The Online Ordering System for subject examination services was implemented for all schools in May 2006. All domestic and international schools are now able to enter their orders for current subject examination services online via a secure Internet site, receive e-mail confirmations and reminders about the services they have ordered, edit their orders, pay for examination services via credit card, check or wire transfer, and be notified when their orders are ready for shipment.

Subsequent enhancements planned for the system include the ability to order customized assessment services (exam construction and administration), a link to up-to-date account information, and a streamlined shipping process, which will provide customers and NBME staff members with the ability to track the shipped FedEx packages via the Internet.

Development of New Grading Guidelines for the Basic Science Subject Examinations

As described previously, the NBME provides schools that administer the clinical science subject examinations with guidelines for analyzing student performance. For the first time, in 2006 NBME provided medical schools with grading guidelines for one of the basic science subject examinations.

In the spring of 2006, the Medical School and Student Services unit initiated a series of interactive web casts to conduct online standard setting activities to develop grading guidelines for the pathology subject examination. Faculty members were recruited for this activity via an electronic survey sent to the Executive Chief Proctors (ECPs) at all US medical schools. The ECPs forwarded the survey to pathology course directors.

Faculty participated in the sessions through a combination of interactive web surveys, rating instruments and materials that were mailed to them. The system requirements for the sessions were minimal (a PC with Internet Explorer 5.0 or Netscape 7.0 and a speaker phone). NBME staff members facilitated each 2½ hour standard setting training session using PowerPoint slides and the Internet. Participants had five business days to complete their standard setting assignments. Three web casts were completed with 32 faculty members representing 31 US medical schools. Overall, comments from participants both during and after the web casts have been positive. NBME will develop grading guidelines for additional basic science subject examinations based on feedback from schools' use of the pathology grading guidelines. In addition to providing data to develop the grading guidelines, participants also provided data regarding the relevance of the items to their curriculum. This information is shared with the committee members responsible for the oversight of this examination.

The NBME appreciates the time and effort that faculty members have invested in the study, which has resulted in new grading guidelines for the 2006-2007 academic years. Faculty members from the following medical schools participated in the web casts.

Boston University School of Medicine
Case Western Reserve University School of Medicine
Creighton University School of Medicine
Howard University College of Medicine
Indiana University School of Medicine
Loma Linda University School of Medicine
Medical College of Georgia School of Medicine
Medical University of South Carolina School of Medicine
Mount Sinai School of Medicine of New York University
Northeastern Ohio Universities College of Medicine
Ohio State University College of Medicine
Sanford School of Medicine of The University of South Dakota
Stony Brook University Health Sciences Center
Texas A & M University System Health Sciences Center College of Medicine
Texas Tech University Health Sciences Center School of Medicine
UMDNJ - New Jersey Medical School
UMDNJ - Robert Wood Johnson Medical School
Uniformed Services University of the Health Sciences F. Edward Hébert School of Medicine
University of Illinois at Chicago College of Medicine
University of Illinois College of Medicine at Peoria
University of Illinois College of Medicine at Urbana-Champaign
University of Louisville School of Medicine
University of Minnesota Medical School
University of Mississippi School of Medicine
University of Nebraska College of Medicine
University of North Carolina at Chapel Hill School of Medicine
University of Oklahoma College of Medicine
University of South Carolina School of Medicine
University of Texas Medical School at San Antonio
University of Texas Southwestern Medical Center at Dallas Southwestern Medical School
West Virginia University School of Medicine

Web-Based Musculoskeletal Examination

NBME staff members collaborated with the 2002-2011 United States Bone and Joint Decade in developing a web-based musculoskeletal examination for the subject examination program. The Bone and Joint Decade is an independent global nonprofit organization with a mission to improve the health-related quality of life for people affected by musculoskeletal disorders. A committee met to review items on May 1, 2006. The new web-based musculoskeletal subject examination has been developed and will undergo pilot testing through the spring of 2007. NBME staff members anticipate that this new examination will be available as a service for all medical schools in the fall of 2007.

Musculoskeletal Examination Task Force

JOSEPH BERNSTEIN, MD
Mercy Hospital
Philadelphia, Pennsylvania

MARTIN I. BOYER, MD, MSC
Washington University School of Medicine

RICHARD D. BRASINGTON, JR, MD
Washington University School of Medicine

DAVID F. GAIESKI, MD
University of Pennsylvania School of Medicine

ALAN S. HILIBRAND, MD
Jefferson Medical College of Thomas Jefferson University

TOBY KING
United States Bone and Joint Decade, NFP
Rosemont, Illinois

EDWARD R. LASKOWSKI, MD
Mayo Medical School

WOJCIECH PAWLINA, MD
Mayo Medical School

KIMBERLY J. TEMPLETON, MD
University of Kansas School of Medicine, Kansas City

TERESE M. WOLPAW, MD
Case Western Reserve University School of Medicine

Patient Safety Project

The NBME convened a task force to identify a list of topics related to undergraduate and graduate medical education patient safety curriculum. The Patient Safety Task Force met in September to generate exemplar test questions related to these topic areas. Test items generated in this activity will be pilot tested in 2007.

Patient Safety Project Task Force

DAVID C. ARON, MD, MS
Louis Strokes VA Medical Center
Cleveland, Ohio

DAVID B. DUGGAN, MD
SUNY Upstate Medical University College of Medicine

ETHAN D. FRIED, MD
St Luke's-Roosevelt Hospital Center
New York, New York

JOHN W. GOSBEE, MD, MS
University of Michigan Medical School

FURMAN S. MCDONALD, MD, MPH
Mayo Medical School

DANIEL B. ORNT, MD
Case Western Reserve University School of Medicine

ROBERT J. PANZER, MD
University of Rochester School of Medicine and Dentistry

MAMTA SINGH, MD, MS
Case Western Reserve University School of Medicine

AMY O'MEARA STEVENS, MD
North Florida/South Georgia Veterans Health System

DIANNE P. WAGNER, MD
Michigan State University College of Human Medicine

DANIEL R. WOLPAW, MD
Case Western Reserve University School of Medicine

Cumulative Achievement Tests and Progress Tests

Collaborative projects are underway to develop cumulative achievement tests for basic science education and progress tests for clerkship education.

The purpose of the cumulative achievement test project is to explore the development and use of integrative, cumulative achievement tests in basic science education. In this approach to testing, students are held responsible for all material presented to date by retesting previously covered topics and testing newly covered topics using integrative items that require understanding of both old and new topics. In contrast with tests covering only material presented since the previous test and permitting students to study topics in isolation, cumulative tests should encourage students to retain previously learned material and attend to inter-relationships among topics. Faculty members and students in the entering class of 2006-07 at Case Western Reserve University School of Medicine are participating in this two-year collaborative project with the NBME.

The purpose of the clinical progress test is to explore the development and use of a form of progress testing in clerkship education. In this progress test the key learning goals and objectives of clerkship instruction were identified, and test specifications were developed that covered all of them. Multiple test forms were then built to those specifications, and students periodically (typically every three months) take one of those forms to determine if they are making good overall progress in mastering those objectives and to identify areas of strength and weakness for individual students. The NBME collaborated with Case Western Reserve University School of Medicine and the University of South Florida in developing this project.

Further research will be conducted in progress and achievement testing in collaboration with medical schools and NBME. Staff members anticipate that this will be a service available to medical schools in the future.

Customized Assessment Services

Current NBME discipline-based basic science subject tests do not fit the horizontally and vertically integrated preclinical programs of many LCME schools. To meet the need for high-quality standardized assessment materials at these schools, the NBME has developed a web-based, customized assessment program that permits faculty members at participating schools to build customized examinations from secure NBME item banks.

To use the system, faculty members log into a secure website to create examination specifications to match their curriculum. Automated test assembly processes at NBME then build a draft exam to those specifications and select "substitute" items. Faculty members review the draft exam and can replace individual test items to improve the fit to course content and define subscores, as well as assign items to customized score-reporting categories. After the exam has been finalized by faculty, the exam files are published to the school for delivery of the examination. Schools are responsible for providing a secure, proctored environment. NBME systems "lock down" the computers on which the exam is delivered to prevent downloading of test items, and NBME central staff can remotely monitor administration. Data streams are returned to NBME for processing. Score reports, students' performance profiles, and a detailed item analysis are posted on the secure *NBME Medical School Resource Site*.

The program is in the final stages of beta testing. Preclinical basic science materials will be available for general use begin-

ning in July 2007. Clinical science materials will tentatively become available late in 2008. In academic year 2007-2008, the NBME will restrict use of the system to 40 institutions on a first-come, first-serve basis. The program will be expanded to accommodate up to 60 schools for academic year 2008-2009. Further expansion will be need-based. Please visit http://www.nbme.org for more information about Customized Assessment Services.

Web-Based Self-Assessment Examinations

In 2003, the NBME introduced a new series of web-based self-assessment exams. The first assessment in the series, the Comprehensive Basic Science Self-Assessment (CBSSA), was implemented in May 2003. Like the medical school-administered Comprehensive Basic Science Examination (CBSE), the four-section, 200-item CBSSA is designed to reflect the format and content coverage of USMLE Step 1. During 2003, staff completed a study demonstrating the predictive value of the CBSSA for subsequent performance on USMLE Step 1.

The second assessment in the series, the Comprehensive Clinical Science Self-Assessment (CCSSA), was implemented in November 2003. Like the medical school-administered Comprehensive Clinical Science Examination (CCSE), the four-section, 184-item CCSSA reflects the format and content coverage of the USMLE Step 2 CK component. Since the content of the CBSSA and the CCSSA reflects the format and content of USMLE Steps 1 and 2 CK, respectively, participants may find the self-assessments valuable as they prepare to take USMLE Step 1 or Step 2 CK.

Participants can elect to take the self-assessment test forms under two timing conditions: (1) the "standard" (50 items/hour for the CBSSA and 46 items/hour for the CCSSA) or (2) "self-paced," allowing up to four hours to complete each 50-item or 46-item section.

The third self-assessment in the series, the Comprehensive Clinical Medicine Self-Assessment (CCMSA), was implemented in January 2006. The content of the CCMSA items reflects that of the multiple-choice component of the USMLE Step 3 and the CCMSA uses multiple-choice questions (MCQs) based on information typically covered in clinical encounters. The CCMSA has 180 multiple-choice items divided into five sections of 36 items each, some of which have images. Participants can elect to take the assessment in either the standard-paced mode (up to 45 minutes to complete each of five sections) or the self-paced mode (up to three hours to complete each of five sections).

Regardless of the chosen timing condition, within an assessment section, participants are free to complete test items in any order; they can skip items, review responses, and change answers. Participants are also permitted to exit and restart the assessment, provided the time allotted for the section has not expired. Upon completion, participants are provided with immediate feedback that includes a total score and a graphical profile indicating content areas of relative strength and weakness. In response to user requests, a score interpretation guide was implemented in 2005 to "translate" the self-assessment score scale for the CBSSA and the CCSSA to an approximate USMLE score scale.

While the self-assessments are provided by the NBME for educational purposes only and are not intended to predict performance on the USMLE, NBME research demonstrates that under certain circumstances there is a moderate relationship between performance on the self-assessments and on the associated Step 1 or Step 2 CK, with some variation in predictive accuracy across test administration.[1]

In 2006, 39,640 assessments were administered: 26,007 for the CBSSA, 11,869 for the CCSSA, and 1,758 for the CCMSA. Exhibits B, C, and D illustrate the number of monthly administrations for each assessment. Exhibit E illustrates the total cumulative number of assessments to 2006.

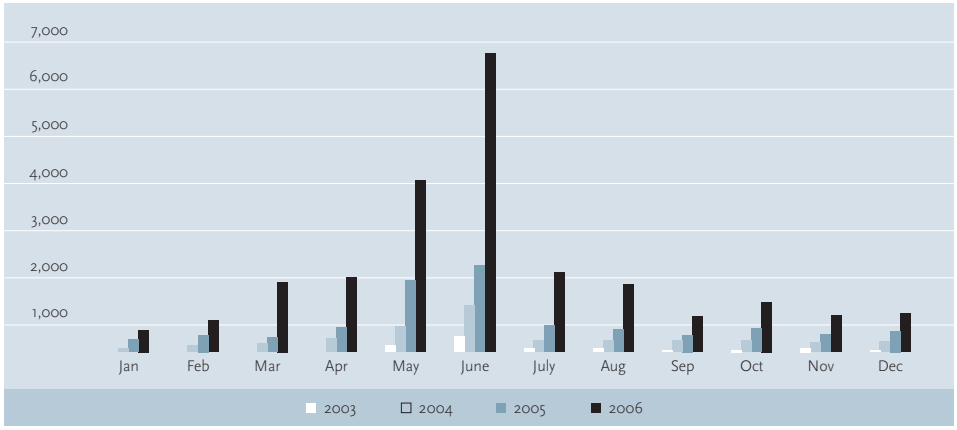
Participants have the option of providing demographic data when they request a self-assessment. According to these data, the assessments have been administered to participants who have attended medical schools in over 154 countries. Exhibit F lists the 10 countries with the most participants. Please visit http://www.nbme.org/sas for more information about NBME Self-Assessment Services or to see a sample assessment.

Spanish Version

The NBME tentatively plans to provide a Spanish version of the CBSSA and the CCSSA as a service in 2007. Staff members at NBME are discussing issues related to pilot testing the items and to producing scores and feedback for these assessments. The NBME has distributed vouchers to schools in Mexico, Puerto Rico, Colombia and Panama for faculty review and pilot testing of the Spanish language versions of the self-assessments. The Spanish language pilot is expected to run through the spring.

Exhibit B

Number of Assessments for CBSSA



[1] *Using the NBME Self-Assessments to Project Performance on USMLE Step 1 and Step 2: Impact of Test Administration Conditions,* Academic Medicine. *2004;79 (10 Suppl):S55-57.*

Exhibit C

Number of Assessments for CCSSA

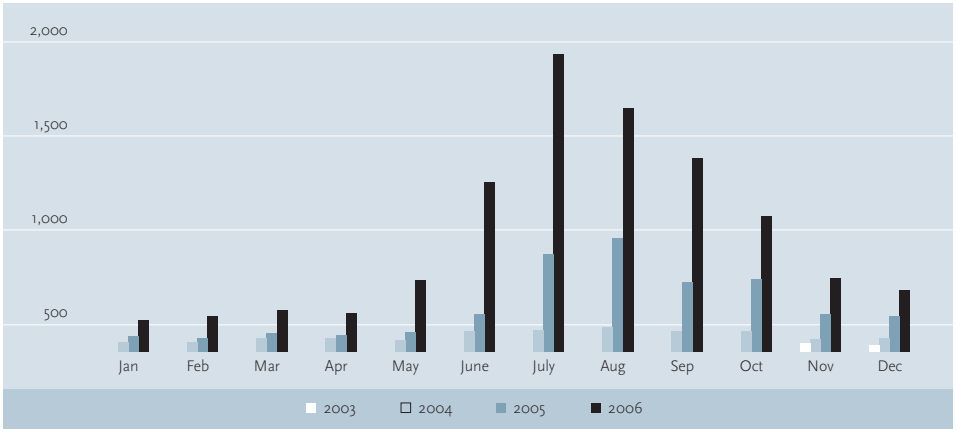


Exhibit D

Number of Assessments for CCMSA

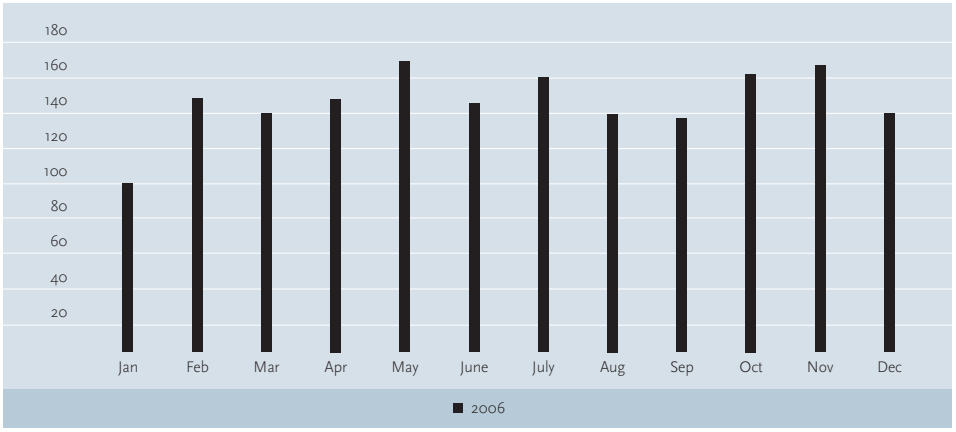


Exhibit E

Cumulative Number of Assessments

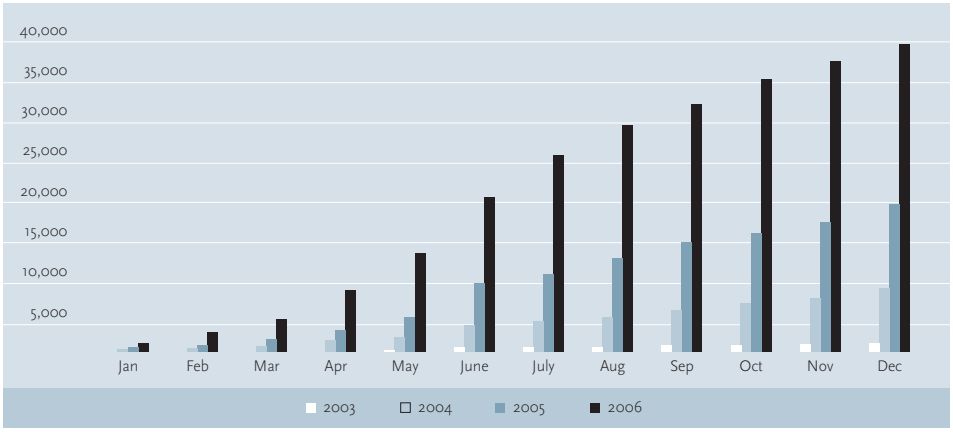


Exhibit F

Participants from International Medical Schools

India	Cayman Islands
Dominica	Grenada
Netherlands Antilles	Saint Kitts & Nevis
Pakistan	China
Mexico	Dominican Republic

Medical School Liaison Program

The medical school liaison program focuses on communication with stakeholders through presentations and attendance at national and regional meetings of academic societies and medical student organizations. The Advisory Committee for Medical School Programs systematically samples the views from various segments of the medical education community through its composition, representing the AAMC, AMA, and the major student groups with interest in the NBME's programs and services. The committee meets twice a year.

Advisory Committee for Medical School Programs

Chair
BRUCE M. KOEPPEN, MD, PHD
University of Connecticut School of Medicine

Association of American Medical Colleges
Council of Academic Societies
DIANA S. BEATTIE, PHD
West Virginia University School of Medicine

Association of American Medical Colleges
Minority Affairs Section
EDWARD B. CHRISTIAN, PHD
Jefferson Medical College of
Thomas Jefferson University

American Medical Association
Council on Medical Education
CLAUDETTE E. DALTON, MD
University of Virginia School of Medicine

Association of American Medical Colleges
Group on Student Affairs
MAUREEN J. GARRITY, PHD
University of Colorado School of Medicine

Association of American Medical Colleges
Organization of Student Representatives
PAUL M. JEZIORCZAK
University of Illinois at Chicago College of Medicine

Association of American Medical Colleges
Group on Educational Affairs
BRIAN E. MAVIS, PHD
Michigan State University College of Human Medicine

Student National Medical Association
THANDEKA MYENI
Medical College of Georgia School of Medicine

Association of American Medical Colleges
Organization of Resident Representatives
LIESL K. NOTTINGHAM, MD
National Institute on Deafness and Other Communication Disorders
Head and Neck Surgery Branch
Bethesda, Maryland

American Medical Student Association
JONATHAN T. PAK
Temple University School of Medicine

Association of American Medical Colleges
Council of Deans
JOHN E. PRESCOTT, MD
West Virginia University School of Medicine

American Medical Association
Section on Medical Schools
KENNETH B. SIMONS, MD
Medical College of Wisconsin

American Medical Association
Medical Student Section
TRAVIS WATSON
East Tennessee State University
James H. Quillen College of Medicine

Faculty Development Workshops
The NBME maintains contact with faculty of US and international medical schools through its medical school programs and has been pleased to offer visits to medical schools that include a workshop for faculty to help them enhance the quality of multiple-choice questions written for their examinations and programs. The NBME offered 10 item-writing workshops at US medical schools in 2006.

In response to requests from medical schools and based on feedback from recent surveys, the NBME has expanded faculty development workshops to include additional topics and venues. Three types of workshops have been piloted this year:

Standardized Patient Test Development Workshop
The three-day workshop for those interested in developing a local standardized patient test was held at the NBME in late September and was fully subscribed. Key elements of test development including exam blueprinting, case format, principles of good checklist development and standard setting were taught. During the workshop, participants had an opportunity to prepare patient scenarios and checklists. Faculty at the workshop developed nine standardized patient cases. Interest was so strong that two more workshops are planned in 2007.

Faculty Development Session at AAMC Annual Meeting
A three-hour session covering issues related to scoring and equating for standardized tests was well received. Additional sessions will be scheduled in 2007.

Web-Based Conferences on Score Reporting and Interpretation
The NBME hosted three two-hour web-based conferences in 2006 to provide faculty with information regarding score reporting and interpretation for faculty who use basic science subject examinations. NBME staff facilitated the session via web and teleconference using PowerPoint slides. Approximately 128 faculty from 13 medical schools participated in the sessions. Additional web conferences for basic science faculty are scheduled to be conducted in 2007. Web casts for faculty who use the clinical subject examinations will be scheduled in 2007.

Services for Health Professional Organizations

THE NBME PROVIDES TESTING, educational, consultative, and research services to a number of medical specialty boards, medical specialty societies, and other health professions' organizations. Services provided include the development, administration, and analysis of examinations for licensure, certification, recertification/maintenance of certification, in-training, self-assessment, and evaluation of special competence.

Based upon extensive experience in developing and implementing high-stakes computer-administered examinations, the NBME is uniquely positioned to assist client organizations in starting new computer-based examinations or transitioning existing paper-and-pencil examinations to computer delivery, whether delivered via the Internet or Prometric test centers.

During 2006, the NBME's Client Programs unit has coordinated services to support 35 computer-based examination programs at Prometric test centers. Further, the range and depth of experience with computer-based testing collectively held by staff throughout the NBME allows us to sustain a high quality of care and attention to detail in support of computer-based delivery. When unforeseen scheduling and testing issues or requirements arise, NBME staff members are available to provide the expertise necessary to meet specialized or unanticipated needs. We have found this standard of service to be invaluable to our clients and for our own computer-based tests.

The NBME is also a well-established provider of examinations delivered through the Internet to homes, offices, and computer lab facilities. Internet-based testing has been successfully used for proctored in-training examinations, proctored qualifying examinations, and non-proctored self-assessment examinations. For examinations that require it, the NBME offers clients the use of proprietary software to aid in proctoring and/or restricting access to other sites and references during test sessions.

The NBME assists client organizations in all phases of examination development, including the following: conducting practice analyses, developing content specifications for examination blueprints, selecting appropriate examination methods, providing item-writing workshops, editing examination

materials for style and clarity, facilitating item- and form-review meetings, composing examination forms, preparing tutorials and practice examinations, reviewing item statistics, and validating the answer key.

The NBME can also provide assistance in printing test materials, preparing candidate brochures and proctors' manuals, identifying test sites, assuring appropriate test conditions, and selecting the most reliable shipping services.

The NBME provides complete psychometric services, including scoring examinations, equating test scores, setting standards, preparing score reports, conducting research studies, and presenting seminars on evaluation issues.

The NBME maintains an active program of research and development to create and support analysis of new evaluation methods and scoring procedures for assessing professional competence and educational achievement. Periodically, client organizations face special problems or identify new needs that require focused investigation or experimentation. In many cases, initial directions or approaches can be taken from findings derived from the ongoing program of research and development at the NBME. After careful review and consultation to define the client's needs and expectations, NBME research specialists will design a study and specify a plan and timetable for data collection and analysis. Findings and recommendations are presented to the client for review and discussion.

During 2006, the NBME provided services for the following 23 organizations:

American Association of Medical Assistants, Inc.
American Board of Anesthesiology, Inc.
American Board of Dermatology
American Board of Genetic Counseling
American Board of Hospice and Palliative Medicine
American Board of Medical Genetics
American Board of Neurological Surgery
American Board of Ophthalmology
American Board of Orthopaedic Surgery
American Board of Plastic Surgery, Inc.
American Board of Quality Assurance and Utilization Review Physicians, Inc.
American Board of Surgery–Hand Surgery
American College of Physicians
American Osteopathic Board of Orthopedic Surgery
American Physical Therapy Association
American Society of Addiction Medicine
American Society of Anesthesiologists
International Board of Heart Rhythm Examiners
National Board of Echocardiography, Inc.
National Board of Veterinary Medical Examiners
National Commission for the Certification of Anesthesiologist Assistants
National Commission on Certification of Physician Assistants, Inc.
Plastic Surgery Educational Foundation

For many of these organizations, the National Board provides full services for multiple examinations. In 2006, 63 examinations were administered to 75,130 examinees. Exhibit H provides further information regarding the various types of examinations.

Exhibit H

Purpose of the Examination	
Licensure	1
Certification	31
Recertification/MOC	16
In-Training	4
Self-Assessment	2
Special Competence	7
Qualifying Exam	2

Of the 63 examinations that were administered during 2006, 55% were computer-based examinations and 13% were Internet-based administrations. Of the remaining 32% paper-and-pencil examinations, plans are underway to transition several of them to either computer-based or Internet-based administration by 2007. Exhibit G provides further information regarding the delivery distribution of examinations.

Enhancements and Initiatives

The NBME pilot tested web-based image review in 2006. Also in 2006, the NBME developed a strategic plan for client programs, and began exploring options for including calipers and full-motion video within future computer-based examinations.

Exhibit G

Delivery Distribution	Number of Examinations	%	Number of Examinees	% of Candidate Volume
Computer-based Examinations	35	55%	23,886	32%
Internet-based Examinations	8	13%	8,967	12%
Paper & Pencil Examinations	20	32%	42,277	56%
Total	63		75,130	

Services for Practicing Physicians

THE POST-LICENSURE ASSESSMENT System (PLAS) is a joint activity of the NBME and the Federation of State Medical Boards (FSMB). PLAS comprises two programs: the Special Purpose Examination (SPEX®) program and the Assessment Center Program (ACP). SPEX is a one-day multiple-choice examination of current knowledge requisite for the general, undifferentiated practice of medicine and is intended to be used for reasons of endorsement or reciprocity of licensure. The ACP provides comprehensive objective and personalized assessments of physicians for whom there is a question regarding clinical competence. Together, the PLAS programs have assessed hundreds of physicians over the past several years for reasons that range from endorsement of licensure to license reactivation after disciplinary action.

PLAS Operations

In 2006, the SPEX tested over 300 physicians, many of whom were seeking to transfer licensure from one jurisdiction to another. Since 1995 when SPEX was delivered as the first computer-based examination, 48 licensing jurisdictions have sponsored candidates for SPEX. In addition, nearly half of the examinees have elected to take the examination without direct state sponsorship, as part of the FSMB self-nomination program. Because it is a "special purpose" examination, medical licensing authorities may use the SPEX as needed to evaluate currency of medical knowledge. Work continues on the development of a modular examination system that will provide a menu of content topics for tailoring knowledge assessments more closely to the practice of the participating physician.

The PLAS continues to deliver assessment services to existing and developing third-party programs that provide evaluation services for licensed doctors. The provision of these assessments via a collaborative approach allows for the delivery of more comprehensive and individualized assessments, improves the cost-efficiency of delivering assessments, enables the physicians to obtain assessments at centers that are more geographically convenient, and facilitates access to educational and remedial opportunities. Programs with whom the PLAS is currently working include the PACE program at the University of California San Diego, Rush University Medical Center in Chicago, Albany Medical College, University of Florida, University of Wisconsin at Madison, the Medical Review and Accrediting Council (MRAC) in New Jersey, and Texas A&M University in College Station. Through these collaborative relationships, more than 160 physicians were assessed in 2006. The PLAS program is currently investigating the emergence of re-entry to practice as a national issue and the potential of collaborating with re-training programs to provide assessment services that will guide educational planning for safe re-entry to practice.

PLAS Research and Development Initiatives

In 2004, the PLAS program defined a multi-faceted research and development agenda that is intended to help meet the assessment needs of practicing physicians in the next 5-10 years. The research and development agenda includes: (1) enhancing the practice relevance of existing competence tests; (2) collaborative development of reliable and valid performance tests; (3) needs assessment and marketing research to anticipate and ensure that assessment services meet stakeholder requirements in the future; and (4) exploring development of a model program for delivery of physician assessment and educational services. Several projects are underway including a national needs assessment project that was awarded funding by the Robert Wood Johnson Foundation in 2006. This collaborative study with the Robert Wood Johnson Medical School continues to determine the types of problems confronting state medical boards and the assessment services that might be useful. National surveys and key-informant interviews of various stakeholders are being conducted to produce detailed descriptions of the types of problems encountered and the design of assessments and educational interventions. Results from this project will be broadly disseminated in 2007. Other research and development projects include the development of a potential pilot project with a collaborating medical school continuing medical education (CME) department to create an opportunity to establish PLAS services as a viable presence in CME and the development of best practices in the evaluation of the impact of assessment and remediation on practicing physicians.

The critical feature of the research efforts of the past two years is that there are sufficient results to begin reporting findings to national audiences and the literature. In 2006, there were several PLAS-related collaborative paper or poster presentations at national and international meetings, and two manuscripts were submitted to refereed journals. The *Journal of Medical Licensure and Discipline* published an article describing the development of the collaborative system among the third-party assessment centers working with the PLAS in late 2006.

PLAS Governing Committee

Chair
RONALD C. AGRESTA, MD
Fort Steuben Ophthalmologists, Inc.
Steubenville, Ohio

GERALD J. BÉCHAMPS, MD
Winchester Surgical Clinic
Winchester, Virginia

SUSAN R. JOHNSON, MD, MS
University of Iowa Roy J. and Lucille A. Carver College of Medicine

JACULINE JONES, EDD
Fallon, Nevada

DONALD E. MELNICK, MD
National Board of Medical Examiners

LEE E. SMITH, MD
Princeton, West Virginia

ALFRED F. TALLIA, MD, MPH
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

JAMES N. THOMPSON, MD
Federation of State Medical Boards

Assessment Center Program Committee

Chair
R. RUSSELL THOMAS, JR, DO, MPH
Rice Medical Associates
Eagle Lake, Texas

RANDOLPH J. CANTERBURY, II, MD
University of Virginia School of Medicine

LAURIE K. DAVIES, MD
University of Florida College of Medicine

DAVID R. GRUBE, MD
Philomath Family Medicine
Philomath, Oregon

CECILIA A. MOUTON
Louisiana State Medical Board

HAROLD J. SAUER, MD
Michigan State University
College of Human Medicine

PLAS Program Committees

SPEX Program Committee

Chair
PHILIP J. BURSTEIN, MD
Philadelphia, Pennsylvania

KIMBERLY S. EPHGRAVE, MD
University of Iowa Roy J. and Lucille A. Carver College of Medicine

CARL M. MYERS, MD
Platte Medical Clinic
Platte City, Missouri

RONALD V. WADE, MD
Carolinas Medical Center
Charlotte, North Carolina

ENGLISH D. WILLIS, MD
Crozer–Chester Medical Center
Chester, Pennsylvania

STEPHEN E. WILLIS, MD
The Brody School of Medicine at East Carolina University

INTERNATIONAL COLLABORATIONS

International Collaborations

IN 2003, THE NBME APPOINTED A TASK force charged with reviewing international opportunities, crafting strategies, and providing future directions for potential growth. The report of the International Collaborations Task Force was presented to and approved by the National Board membership at its 2005 Annual Meeting. The report included a mission statement, goals, strategic principles, and recommendations for achieving those goals. Among the recommendations proposed and approved were:

- A recognizable entity, the International Collaborations program, should be created within the organizational structure to manage and coordinate the programs.
- The initial focus should concentrate on a limited number of international regions and strong consideration should be given to Latin America and Europe.
- The NBME should develop the capability of offering examinations in multiple languages with the first priority being examinations in Spanish.
- The NBME should strive to develop appropriate collaborations in the outreach, development, and delivery of international assessment services based on substantially compatible missions and values.
- The International Collaborations program team should have the support of an advisory committee.
- The initial commitment to this activity would be for five years with a complete re-assessment of the feasibility of the program at the end of the fourth year.

Following the 2005 Annual Meeting, an International Programs unit was created and personnel were recruited to manage and coordinate these activities. In 2006, the National Board staff continued to make progress in meeting these recommendations.

Canada
In the fall of 2004, the NBME entered into agreement with the Medical Council of Canada for provision of psychometric consultation services. The initial purpose of this contract was to provide psychometric oversight of its operational and developmental programs during the sabbatical of their director of evaluations. Due to the success of this initial phase, the scope of this work was expanded to include continued review of examination results and the dean's biannual report. Negotiations are underway to define further collaborative activities.

Panamá
Collaborative work with the University of Panamá began in 2002 and continues today. An initial pilot examination was administered to the graduating class of the university's medical school. This successful pilot project led to the creation of the Residency Selection Process Examination (RSPE) in Spanish. The RSPE became mandatory during 2003 for all medical graduates seeking residency placement in Panamá. It has been administered annually since the initial administration in January 2003.

The following year, the Panamanian government passed a law requiring all medical graduates to pass an independent examination as part of the requirements to obtain an initial license to practice medicine. NBME staff members actively collaborated with the Panamanian exam committee on all phases of the examination process from developing the examination blueprints to identifying an item selection process to training proctors for the examination administration. Administration is twice annually.

In October 2005 the first high-stakes examination for licensure to practice medicine in Panamá was administered to 202 candidates. Subsequent administrations in 2006 and the standard setting exercise were canceled. NBME psychometric staff was to conduct a standard-setting exercise in Panamá to assist the Examination Oversight Committee in setting a standard for this new certification examination, following the second administration. Recently, the Minister of Health has reinstated the legislation and has indicated a desire to begin dialogue to reinstate the examination.

United Kingdom and Ireland
There have been a variety of discussions with representatives of the various Royal Colleges. The Federation of Royal Colleges of Physicians (RCP) in London entered into agreement with the NBME for provision of psychometric consulting services. Work on this project continued throughout 2006.

The Royal College of Physicians of Ireland (RCPI) has extended the item-sharing project in operation since May 2003. The purpose of the project was to allow RCPI to select and use NBME pool items in their examinations assessing a candidate's knowledge and understanding of the basic sciences relevant to medical practice and of the common or important disorders for entry into specialty training in Ireland.

The NBME has also entered into agreement with the Royal College of Radiologists for the provision of psychometric consultation services including standard setting exercises. The NBME also provided additional services such as item-writing workshops and consultation services related to the development of examination blueprints and the test development process.

Italy
The NBME entered into a large-scale two-year pilot program in Italy in which an Italian comprehensive multiple-choice examination was constructed from NBME item banks according to an examination design determined by faculty at the collaborating schools: the University of Milan, the University of Bologna, the Universitá Cattolica Sacre Coure (Gemelli University), University of Parma Medical School, Università Degli studi Di Ferrara and the University of Florence.

The exam items were first translated into Italian and subsequently reviewed by representatives from each of the collaborating universities. Students were provided with a purpose statement and sample questions, all in Italian. The first administration of this exam is scheduled for spring 2007.

Through this pilot study, the NBME hopes to gain further experience working in the European educational culture, and to determine if the patient-centered multiple-choice question format used in North America can be used in Europe. The results of this pilot project will be considered to identify the potential market for NBME services with other European universities and governments.

Kazakhstan
After a visit to the NBME headquarters from representatives of the Kazakhstan Ministry of Health (MOH) in early March 2005, the visitors expressed an interest in collaborating with the NBME. The focus of activity through 2006 was to determine needs and assist in developing a plan for future phases of work. Subsequent planning with the MOH will resume in 2007.

Peoples' Republic of China
The NBME, in collaboration with the National Medical Evaluation Centre (NMEC) of China, developed a fellowship program that allows Chinese scholars to be exposed to an array of assessment activities through visits to the NBME headquarters in Philadelphia. The NBME, with the support of the Foundation for Advancement of International Medical Education and Research (FAIMER), hosted a second fellow in the final quarter of 2006. Because of the interest in assessment of clinical skills, this fellow participated in a faculty development workshop on clinical skills and worked closely with staff members of the Clinical Skills Evaluation Collaboration to become familiar with case development procedures, quality assurance processes, and scoring procedures.

In late August 2006, several NBME staff members were invited to participate in the NMEC's annual conference in Chengdu, China. The plenary sessions focused on a range of medical education and measurement topics. NMEC leadership presented a five-year collaborative plan which included an increased level of consultation from NBME, extension of the fellowship program, and interest in exploring the NBME's computer-based testing expertise.

Taiwan
In the latter part of 2006, NBME test development leadership provided the Ministry of Examination of Taiwan (MOEX) with two item-writing workshops in Taipei, Taiwan. The workshops, attended by basic science faculty members and physicians, focused on the development of clinically relevant basic science and clinical science items as well as difficult areas such as ethics.

NBME and FAIMER Collaboration
Staff members from the International Collaborations unit and FAIMER have begun collaborative efforts that will support and advance the missions of both organizations. The NBME and ECFMG have in common the mission of protecting and enhancing the health of the public. The NBME achieves this mission by supporting educational programs through the development and delivery of high-quality assessment tools for use by the health care professions. The ECFMG attains it through FAIMER, which focuses on improving international medical education through faculty development and research. Given these complimentary missions, the purpose of this agreement is to formalize the productive and cooperative relationship between the NBME and ECFMG/FAIMER around international medical education.

Future Potential Initiatives
The NBME is currently exploring opportunities in Mexico for pilot testing of various products. Several NBME staff members were invited to the National Conference on Medical Education in Puebla, Mexico to participate in a symposium panel on certification of doctors as well as offer item-writing workshops to attendees.

Plans are underway to identify individuals with knowledge and expertise in international medicine and education for possible membership on the International Collaborations Advisory Committee.

Developmental Programs

THE DEVELOPMENTAL PROGRAMS unit was created in October 2005 with two primary objectives: (1) to pursue opportunities for development of products and services to meet the needs of new clients, such as graduate medical education (GME) and CME programs or credentialing organizations, and in support of maintenance of licensure (MOL) and other maintenance of competency (MOC) activities, and (2) to facilitate the transition of products from the Center for Innovation to Assessment Programs, where they will be further developed to become part of the operational products and services offered by the NBME.

In 2006, the Developmental Programs unit coordinated meetings with some of the NBME's clients that are members of the American Board of Medical Specialties (ABMS) to discuss the Trusted Agent concept in connection with portfolios and to discuss additional assessment services, such as multisource feedback (MSF), which may be of interest to our clients. Unit staff gave presentations on the Assessment of Professional Behaviors (APB) program at meetings with the PLAS program and committee groups. A talk and a poster session were presented and meetings were attended at several venues with GME-related themes, including the AAMC Northeast Group on Educational Affairs meeting, the AAMC Group on Resident Affairs Spring Meeting, and the ACGME/ABMS Conference on Assessing and Improving Patient Care. These activities have all been valuable in exploring potential market opportunities for our assessment services and to explore opportunities for inter-organizational collaboration.

In 2006, the Developmental Programs unit focused primarily on the APB program, for which it took operational responsibility beginning in 2007. Developmental Programs has been working closely with the Center for Innovation to further define the APB program; these efforts will culminate in a scale-up pilot with a number of residency programs beginning in July 2007. The goals of the July pilot are to continue producing and disseminating validity research in support of multisource feedback, to ensure the scalability of the information technology infrastructure, and to further define the instruments, materials, and services that will comprise the APB program.

RESEARCH AND DEVELOPMENT

Research and Development

Center for Innovation
The NBME Center for Innovation was created in June 2001 as a direct outcome of the NBME internal reorganization of staff units. Its mission is to assist in formulating and actualizing the strategic vision of the NBME. Center responsibilities include:

- exploring new technologies, competencies and markets relevant to and potentially supportive of the NBME mission;
- identifying external entities with common strategic interests and nurturing those relationships;
- administering the Edward J. Stemmler Medical Education Research Fund;
- participating actively in strategic planning and implementation.

The Center meets its responsibilities through a structured sequence of information gathering from relevant disciplines and sources; generation of ideas; selection of promising ideas for proposal development and funding; implementation of pilot projects; assessment of feasibility and market potential; and transfer of resultant "products" to the NBME to be made fully operational. Although the atmosphere is more entrepreneurial and less structured than has been traditionally the case at the NBME, strong scholarly and academic links are maintained both internally at the NBME and externally. Management of ideas is undertaken with advice and feedback from other NBME staff, the Executive Board and an advisory committee.

Center Projects
Projects active in 2006 are summarized below.

Assessment of Professional Behaviors

The APB program developed following discussions in 2001 initiated by the National Board membership regarding the NBME's potential role in assessing professionalism in medicine. Following a 2002 invitational conference co-sponsored by the AAMC and the NBME, the APB program was initiated with the aim of defining an MSF tool for use primarily within a formative assessment program. An Instrument Design Task Force drafted a unique MSF instrument that allows observers to provide ratings on specific, observable behaviors that are of central relevance to professionalism. Pilot studies were conducted in 2004, 2005 and 2006 to provide a proof-of-concept demonstration and to further refine the instruments. The Center for Innovation handed off operational responsibility for the program to the Developmental Programs unit in January 2007. The NBME will conduct a final scale-up pilot starting in July 2007 with a number of residency programs, which are the initial target market for the program. The pilot study will be coordinated by Developmental Programs with input from Center for Innovation staff. The goal of the pilot study is to obtain information on validity and logistical issues prior to making a decision to launch APB as a live program in 2008.

Natural Language Processing (NLP)

New assessment initiatives have been stimulated by the Accreditation Council for Graduate Medical Education (ACGME) and the ABMS in relation to general competencies and maintenance of certification for medical doctors. There is also a desire to make credit hours awarded in CME more evidence-based. These initiatives may result in the need for a substantial increase in testing with MCQ and related methodologies. Testing needs might conceivably be met by NLP technology, made possible by recent advances in computational linguistics.

The first pilot testing the feasibility of NLP focused upon computer generation of MCQs. The rationale was that the number of banked items matching much of the new content to be tested is currently small, and generation of new items using current methodologies would involve substantial time and expense. The pilot was termed Rapid Item Generation (RIG). In collaboration with a computational linguistics group at the University of Wolverhampton, medical text was aggregated, analyzed and organized into parts of speech, and the commonly occurring nouns or key concepts were identified. The system then transformed into questions the sentences containing the key concepts, and added possible (wrong) answers. After a few iterations of human review and programming changes, this system produced a number of multiple-choice questions. None of these contained vignettes, but with post-editing many were viewed as potentially usable. The second feasibility pilot started at the end of 2006. It is focused on providing assistance with the traditional approach to writing items and is called Computer-Assisted Item Development (CAID). In addition, next steps in NLP research are being planned.

Data Sharing Through a Trusted Agent

A pilot proposal was approved by the Executive Board in 2004 for an assessment toolbox and portfolio system. In exploring different models for these services, the Center conceptualized formation of an independently operated Trusted Agent infrastructure for safe, real-time sharing of data across organizations in the "House of Medicine."

The initial pilot to test feasibility has involved a collaborative agreement between the NBME and the FSMB to link their data repositories to enable electronic compilation of a Common Licensure Application Form (CLAF) in near real time. This would allow physicians in participating states (Kentucky, New Hampshire and Ohio) to apply for licensure on the web and dramatically shorten and simplify the process of compiling the application form. This pilot "went live" on a limited basis at the Ohio State University Medical School in October, and has been operating in full live mode state-wide since December 14, 2006. As of January 2, 2007, 91 applicants in Ohio had successfully applied for an initial license using the

Trusted Agent infrastructure. The traditional paper application is cumbersome and time-consuming, sometimes requiring weeks and months for the process to be completed. Using the current Trusted Agent record, the time expended by an applicant from registration with the Trusted Agent to successful delivery of the completed application to the Ohio State Medical Board has been as little as 12 minutes. Roll-out is scheduled for New Hampshire and Kentucky in January and February.

The Center is also exploring a variety of other potential Trusted Agent data compilation services that could be provided to the individual throughout the training practice continuum, to organizations, and eventually to the public. Examples include customized reporting of data (e.g., for credentialing purposes), supportive tools for self assessment, portfolios and eventually customized analysis of data compilations.

Assessing Clinical Decisions of Medical Students

A pilot using Clinical Judgment Analysis (CJA) to assess diagnostic decisions made by medical students in their clinical years was completed. The web-based tool used clinical data from large numbers of patients with one of two conditions (sore throat and febrile illness in infant girls). Student participation was facilitated by the Organization of Student Representatives, American Medical Student Association, American Medical Association–Medical Student Section, and Student National Medical Association. Of 410 registrants, 124 completed the pilot. As participants worked through the cases, they were given either task, cognitive or probabilistic feedback, or no feedback at all. Analyses indicated that the different types of feedback did not affect changes in diagnostic accuracy in the same way for both tasks. Probabilistic feedback was more useful in the Sore Throat Task, as participants who received this type of feedback outperformed all others. Probabilistic feedback was only marginally effective in the Febrile Infant Girls Task. Overall, scores on the Febrile Infant Girls Task were lower than scores for the Sore Throat Task. Some students found the CJA tool to be a useful educational resource while others considered it burdensome. Responses to a follow-up questionnaire were generally more positive about the Sore Throat Task than the Febrile Infant Girls Task. Given the strong case-specificity of the results obtained and student reactions, further development of this methodology has been placed on hold.

Scouting Activities

Environmental scanning for relevant topics, themes and trends is essential to the Center, not only for future pilot development but also to inform existing projects and refine activities underway. In 2006, examples include the following:

- Avatar and animation authoring
- Distributed knowledge creation
- High fidelity simulators
- Ideas futures
- Learning theories
- Natural language processing
- Online knowledge compilation and management
- Portfolio assessment
- Search engine technology
- Social networking
- Virtual communities
- Work-based assessment

Center for Innovation Advisory Committee

Stemmler Medical Education Research Fund

During the 2005-2006 grant cycle, 55 regular Stemmler Fund proposals were reviewed by 117 external reviewers. On March 27, 2006 the Stemmler Fund Steering Committee discussed the top 12 grant proposals; their recommendation to award three grant proposals (see "2005-2006 Stemmler Awardees" below) was announced April 7. Since inception, the Stemmler Fund has awarded 56 grants, for a total of just over $3.6 million.

The 2006-2007 Stemmler Call for Proposals (CFP) was distributed in June 2006, with an application deadline of October 2, 2006. Forty-seven proposals were submitted to 96 external reviewers. Grant decisions for this cycle will be made by the Stemmler Fund Steering Committee at their meeting on April 5, 2007, and awards will be announced April 9, 2007.

2005-2006 Stemmler Awardees

Columbia University - College of Physicians and Surgeons
Designing Cognitive Measures of Practice-Based Learning and Improvement as an Iterative Process Combining Rasch and Classical Measurement Methods
PI: Peter C. Wyer, MD
Amount of Award: $149,975
Duration of Award: 2 years

University of California, San Francisco
Cultural Competence Using Shared Decision Making
PI: Karen E. Hauer, MD
Amount of Award: $149,975
Duration of Award: 2 years

University of Missouri-Columbia School of Medicine
Use of Portfolios to Assess Medical Student Outcomes
PI: Kimberly G. Hoffman, PhD
Amount of Award: $150,000
Duration of Award: 2 years

Stemmler Fund Steering Committee

Chair
RUTH B. HOPPE, MD
Michigan State University
College of Human Medicine

MARK A. ALBANESE, PHD
University of Wisconsin School of Medicine and Public Health

M. BROWNELL ANDERSON, MD
Association of American Medical Colleges

LYNN M. CLEARY, MD
SUNY Upstate Medical University College of Medicine

JOSEPH S. GONNELLA, MD
Jefferson Medical College of Thomas Jefferson University

SHELDON JACOBSON, MD
Mount Sinai School of Medicine of New York University

RICHARD M. SATAVA, MD
University of Washington School of Medicine

STEPHEN C. SCHOENBAUM, MD, MPH
The Commonwealth Fund
New York, New York

Ex-officios
National Board of Medical Examiners
JOE E. CRICK, EDD
ROBERT M. GALBRAITH, MD, MBA
DONALD E. MELNICK, MD
RONALD J. NUNGESTER, PHD
PETER V. SCOLES, MD

Other Research and Development Activities

NBME Research Day, held on October 13, 2006, provided careful review and discussion of NBME research endeavors by a nationally recognized panel of experts that included Paul W. Holland, PhD, Maxine A. Papadakis, MD, and John H. Shatzer, PhD.

NBME Research Review Panel

PAUL W. HOLLAND, PHD
Princeton, New Jersey

MAXINE A. PAPADAKIS, MD
University of California, San Francisco, School of Medicine

JOHN H. SHATZER, PHD
Vanderbilt University School of Medicine

Research Oversight at the NBME

In 2006, the NBME Research and Development Steering Committee conducted a careful review of NBME research activities at both a strategic and tactical level. This review was led by a research review group comprised of NBME staff members who are active researchers. This group was convened and charged to undertake the review by the Steering Committee. The resulting comprehensive report was reviewed by the Steering Committee and by the NBME Executive Board. Along with a consensus that the state of the research at the NBME is strong, changes were recommended to further strengthen the program, including the following:

- expanding the composition of the Steering Committee to include four additional positions to be filled by active NBME researchers;
- making the Steering Committee responsible for creating and maintaining an institutional research agenda for prioritization and monitoring of large projects and review of smaller projects;
- creating a formal Office of Research Support to provide administrative support to the Steering Committee, as well as the Stemmler Fund and other appropriate NBME research endeavors;
- reevaluating our methods of obtaining external oversight of our research enterprise;
- ensuring that budgeted programmatic research is properly reviewed (by the Steering Committee and governance), staffed and funded; and
- preserving support for investigator-initiated research.

2006 Research Summary

Analysis of Performance Differences by Gender on USMLE Step Examinations

As part of an ongoing investigation of the relationship between USMLE performance and examinee characteristics that should be, for the most part, irrelevant to the constructs being measured by the Step examinations, staff is continuing to examine the relationship between examinee gender and performance on the Step exams. The most recent focus has been on gender differences within the Step 1 and 3 examinations. The aim of the study is to assess the degree to which collateral information, such as MCAT scores and undergraduate grade point average, can explain gender-related differences in exam performance. It will also focus on whether results vary as a function of recent changes in testing time.

Analysis of Step 2 CS Performance Differences by Patient Note Mode of Entry

Staff is examining the way in which examinees choose to complete their Step 2 CS patient note (written versus typed) and whether mode of entry relates to various examinee characteristics. One area of focus is on the relationship among mode of entry, time spent on the note, and final ratings.

Assessing the Factor Structure of a High-Stakes Clinical Skills Examination

Research continues in the assessment as to whether the performance of examinees on selected Step 2 CS cases can be best explained by the generic clinical skills of the examinees, by the nature of the clinical scenario encountered, or by some combination of the two. A confirmatory factor analytic approach is being used to determine how each of the conceptual models matches Step 2 CS response data. Research in this area is intended to provide evidentiary support for the validity of Step 2 CS use and interpretation.

Equating a Performance Based Assessment: Using Ordinary Least Squares for Estimation of Rater Stringency

The focus of this study is to lay out theoretical foundations behind equating techniques used for Step 2 CS. The measurement model used for equating various components of Step 2 CS is a linear model with two factors. The observed score is modeled to be a linear function of the examinee proficiency and the stringency of the rater. Estimation of rater stringency is accomplished by using the ordinary least scores method and the univariate ANOVA model. This project is an investigation of how the scores computed from fitting this model are related to the estimated marginal means. Also of focus is whether the equating method conforms to most properties of test equating.

Psychometric Characteristics and Response Times for Content-Parallel Extended-Matching and One-Best-Answer Items in Relation to Number of Options

This research continued the investigation of the impact of item format and number of options on the psychometric characteristics (p values and biserials) and response times for MCQs appearing on USMLE. In the most recent study in this series, 192 MCQ items were each presented in two formats: in a two-item extended-matching set and as an independent item. For the extended matching format, there were two versions: a base version that included all options (10 to 26) and an eight-option version. For the independent-item format, there were three versions: a base version that included all options, and eight-option and five-option versions created by a group of physicians that selected options without information about examinee performance. All items were embedded in unscored sections of 2005-06 Step 2 CK test forms.

Consistent with research done in 2005, versions of items with more options were harder and required more testing time; no differences in item discrimination were observed. Mean response times for items presented in the extended-matching format were lower than for those presented as independent items, primarily because of shorter response times for the second item presented in a set. These results indicate that the use of the extended-matching format and smaller numbers of options per item (and more items) should result in more efficient use of testing time and greater score precision per unit of testing time. A new study conducted using unscored sections of 2006-07 Step 2 CK test forms is investigating potential efficiency gains achievable through further reduction in numbers of options.

Use of Survival Analysis to Longitudinally Model Subsequent USMLE Pass Rates for Borderline Passers on Step 1

The purpose of this investigation is to identify individuals who just barely passed Step 1 and to develop a model that accounts for the amount of time it takes to pass the USMLE sequence, describing the findings as a function of characteristics such as medical school location, gender, and primary language. The investigation will use survival analysis tools that are well-suited to examine performance trends.

Variability of Standardized Patient Ratings during the Initial Phase of Clinical Skills Examination

Ratings provided by standardized patients (SPs) serve as the basis for producing equated scores for Data Gathering and Interpersonal and Communication Skills components in the Step 2 CS examination. An equating parameter that is unique to particular combinations of case and SP is estimated during the calibration process and used routinely for scoring purposes. The purpose of this study is to assess variability of rating stringency and recording accuracy of SPs during the start-up phase. Specifically, an index is derived that represents the stringency level of the SP for any given session, independent of the ability level of examinees in the session. This index is examined longitudinally for a sample of SPs.

Building a Validity Argument for the Assessment of Professional Behaviors

The NBME's APB program includes an MSF tool that is currently under development to assess professionalism and related competencies among physicians in training and practice. Multisource feedback (also known as 360-degree feedback) has gained wide acceptance in industry despite a relatively thin understanding of its measurement performance. In building a validity argument for MSF, one is challenged to move beyond the arguments made for traditional MCQ exams. The APB research program includes theoretical work to build an argument-based validity framework for MSF, starting with an effort to paint a clearer theoretical picture of the construct that an MSF assessment of professionalism is designed to measure. Professionalism is primarily a social competency rather than a cognitive one. To behave professionally is to learn and adhere to a specific set of norms concerning the expression of social roles in the course of performing clinical work. This research draws on a body of sociological and anthropological field work addressing socialization and informal social control among physicians to develop hypotheses about how adjustment to professional norms ought to behave in relation to other social and psychological constructs. The next step will be to make explicit the chain of inferences required for the valid interpretation of MSF. This theoretical work will help in the identification of weak points in the measurement process. Resulting theoretical insights are being woven into the APB's research using data from recent field trials, which include ongoing work with protocol analysis ("think-aloud" studies) to characterize MSF participants' reactions to items, analysis of missing data to better understand potential nonresponse bias, and factor analysis to assess how the items perform together. Survey work is in development to gather more specific information on the observability and objectivity of MSF items in the context of residency training.

Professional Behaviors Advisory Group

Task Force Members

STEPHEN J. BLUMBERG, PHD
Center for Disease Control & Prevention
Hyattsville, Maryland

THOMAS S. INUI, MD, SCM
Regenstrief Institute, Inc.
Indianapolis, Indiana

KATHLEEN MAZOR, EDD
University of Massachusetts Medical School

INGRID PHILIBERT, MHA, MBA
Accreditation Council for Graduate Medical Education
Chicago, Illinois

KELLEY M. SKEFF, MD, PHD
Stanford University Hospital

JAMES W. SMITHER, PHD
La Salle University

RICHARD R. REILLY, PHD
Wesley J. Howe School of Technology Management
Hoboken, New Jersey

Consultants

RUTH B. HOPPE, MD
Michigan State University College of Human Medicine

JOCELYN LOCKYER, PHD
University of Calgary Faculty of Medicine

PAPERS AND PRESENTATIONS

Published Papers and Invited Presentations

The list of published papers and invited presentations during 2006 reflects the scholarly work of the NBME staff members, who are sought after as speakers and panel members at meetings and conferences throughout the world.

NBME staff members are shown in BLUE.

Published in 2006

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BUTLER A. Assessment issues and constructing written test questions, Kasturba Medical College; October, 2006; Manipal, India.

BUTLER A. Assessment issues related to medical education. Universidad Central del Ecuador, School of Medicine, January, 2006; Quito, Ecuador.

BUTLER A. Customized assessment services: a new component of the NBME Subject Examination program. Association of Chairs of Department of Physiology Retreat; December, 2006; Liberia, Costa Rica.

BUTLER A. Update on USMLE and NBME. Universidad San Francisco de Quito, School of Medicine; February, 2006; Quito, Ecuador.

BUTLER A. Update on USMLE and NBME services. International Association of Medical Science Educators; July, 2006; San Juan, Puerto Rico.

BUTLER A. Update on USMLE and NBME. Microbiology and Immunology Educational Strategies Workshop; May, 2006; Myrtle Beach, SC.

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BUTLER A. USMLE and NBME update. Kasturba Medical College; October, 2006; Manipal, India.

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DE CHAMPLAIN AF, NUNGESTER RJ. An introduction to item response theory: overview of common models and applications to medical education assessment issues. Workshop. Charting New Courses in Clinical Competence: 12th International Ottawa Conference on Clinical Competence; May, 2006; New York, NY.

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GALBRAITH RM, PANNIZZO LO. La experiencia de los Estados Unidos (EEUU) con exámenes nacionales de medicina. Universidad San Francisco del Quito Medical School; January, 2006; Quito, Ecuador.

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HAWKINS RE. Value of the in-training examination. Rheumatology Training Directors' Retreat, American College of Rheumatology; March, 2006; Atlanta, GA.

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HENZEL TR. Development and evaluation of a classification scheme for competence assessment reports of practicing physicians. American Educational Research Association; April, 2006; San Francisco, CA.

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HOLTZMAN KZ. Developing an item pool. Sino-US Symposium on Medical Licensing Examination; August, 2006; Chengdu, China.

HOLTZMAN KZ, SWANSON DB. Developing high-quality multiple-choice tests to assess basic science knowledge using patient vignettes. Workshop. Charting New Courses in Clinical Competence: 12th International Ottawa Conference on Clinical Competence; May, 2006; New York, NY.

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HOLTZMAN KZ, SWANSON DB. Developing high-quality multiple-choice tests using patient vignettes and multimedia. Pre-conference workshop. Slice of Life Conference; July, 2006; Lausanne, Switzerland.

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HOMAN A, GEORGE J, HERBERT B, FURMAN G, SCOTT CL. Training challenges and solutions: SP performance during a clinical skills assessment. Association of Standardized Patient Educators; August, 2006; Tucson, AZ.

JOBE A. Update on AMA initiative to transform medical education (ITME). AMA Interim Meeting, Section on Medical Schools; November, 2006; Las Vegas, NV.

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MELNICK DE. Computer-based case simulation. Sino-US Symposium on Medical Licensing Examination; August, 2006; Chengdu, China.

MELNICK DE. Educating doctors in the USA. Sino-US Symposium on Medical Licensing Examination; August, 2006; Chengdu, China.

MELNICK DE. From defending the walls to improving global medical education: fifty years of collaboration between the ECFMG and the NBME. ECFMG; July, 2006; Philadelphia, PA.

MELNICK DE. Medical licensing in the US. Sino-US Symposium on Medical Licensing Examination; August, 2006; Chengdu, China.

MELNICK DE. Methods for assessing practicing physicians. Joint workshop. Royal College of Physicians, Health Foundation-Nuffield Trust; June, 2006; London, UK.

MELNICK DE. Update from the NBME and USMLE. Association of Medical School Pharmacology Chairs; January, 2006; Tucson, AZ.

MELNICK DE. Who's driving: curriculum committees, external examinations, or someone else? University of Kansas School of Medicine; April, 2006; Wichita, KS.

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ORR N, KLEIN S, BLAKE A, PLENNER S. Paper and pencil or computer-based test delivery: what's right for delivery of your MCQ exam? National Organization for Competency Assurance; November, 2006; Orlando, FL.

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SCOLES PV. Strategies for supporting change in the pre-doctoral curriculum. Panel. American Dental Education Association; November, 2006; LaJolla, CA.

SCOLES PV, VELOSKI J. Connecting humanistic medical education and physician licensure. Medical Education in 2020 Symposium. Jefferson Medical College; November, 2006; Philadelphia, PA.

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WAINER H. Graphic discovery: sixteen short tales. Germantown Society for Science and the Arts; January, 2006; Philadelphia, PA.

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WAINER H. Logical and empirical evidence that smaller schools do not improve student achievement. The College Board; February, 2006; New York, NY.

WAINER H. The most dangerous equation. Department of Statistics, University of Virginia; November, 2006; Charlottesville, VA.

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WAINER H. The most dangerous equation. Department of Statistics, Duke University; December, 2006; Durham, NC.

WAINER H. The most dangerous equation. Department of Statistics, Cornell University; November, 2006; Ithaca, NY.

WAINER H. Three challenges to the practicality of value-added models. Curry School of Education, University of Virginia; November, 2006; Charlottesville, VA.

WAINER H. Three challenges to the practicality of value-added models. College Board; February, 2006; New York, NY.

WAINER H. Three challenges to the practicality of value-added models. Department of Education, University of Massachusetts; April, 2006; Amherst, MA.

WAINER H. Using testlet response theory to understand a survey of breast cancer patients. NIH PROMIS Conference; September, 2006; Gaithersburg, MD.

WAINER H. What happens if you don't require the SAT? Bowdoin College as an example. College Board; February, 2006; New York, NY.

USMLE

United States Medical Licensing Examination (USMLE)

THE USMLE, COSPONSORED AND co-owned by the NBME and the Federation of State Medical Boards (FSMB), was implemented in 1992-94 as the successor of the NBME certifying examinations, the Federation Licensing Examination, and the Foreign Medical Graduate Examination in the Medical Sciences. The USMLE is the largest NBME examination program, accounting for approximately 80 percent of the NBME's programmatic activity.

USMLE Administration, Minimum Passing Scores, and Performance

USMLE registration, test administration, and score reporting occur continuously throughout the year. For Step 1, Step 2 Clinical Knowledge (CK), and Step 3, which are the computer-based testing (CBT) components of the USMLE program, test scheduling and delivery are provided by Prometric, Inc.®, part of The Thomson Corporation™. These CBT examinations are currently administered at more than 350 US/Canadian Prometric test centers and more than 125 international Prometric test centers. Additional test centers are located at eight medical schools in the United States. The Step 1 and Step 2 CK examinations are administered worldwide; the Step 3 examination is administered only in the United States.

Step 2 Clinical Skills (CS) is a standardized patient (SP) examination. Scheduling and test delivery for Step 2 CS are provided by the Clinical Skills Evaluation Collaboration (CSEC). There are five test centers.

For each of the Step examinations, once the registration process is completed, applicants make their own appointment to take the examination at a location and time most convenient to their schedule. Examination records are processed continuously, and scores are reported weekly. Most Step 1 and Step 2 CK examinees receive their scores approximately three to four weeks after their test date and most Step 3 examinees, four to six weeks. For Step 2 CS, most examinees receive their results by approximately eight weeks after the test date but this length of time may vary for some individuals because of the scoring and quality assurance steps associated with this component of USMLE.

A pass or fail result is provided, as a USMLE recommendation, for each examinee. Passing results are based on achievement of specified levels of proficiency established prior to administration of examinations. Statistical procedures are employed to ensure that for each Step, the level of proficiency required to pass remains uniform across forms of the examination. As noted in the USMLE *Bulletin of Information* and at the USMLE website, the score required to meet the recommended level of proficiency is reviewed periodically and may be adjusted without prior notice. Announcements about such activity are posted on the Internet at http://www.usmle.org.

In reviewing standards for USMLE examinations, the USMLE Step Committees employ information gathered from a number of sources including standard setting surveys. These surveys, which seek opinions on the appropriateness of current USMLE pass/fail standards for each of the Steps, are sent to random samples of examinees, directors of basic and clinical science courses and clinical clerkships, associate deans for academic and student affairs, directors and chief residents from residency programs, members of USMLE test material development committees, executive directors and presidents of all state medical boards, and members of the NBME Board and the FSMB Board of Directors.

In addition to surveys, USMLE Step Committees consider the results of content review by standard setting panels. These panels are typically made of physicians who are not otherwise involved in the USMLE program. These panels review the content of the Step examinations and, through a series of exercises, provide data that reflect their opinions on minimally acceptable levels of performance.

Step 1

Details on the performance of examinees taking Step 1 in 2005 and 2006 are provided in Table 1. Data for 2006 are based upon examinees whose results were reported through February 7, 2007. Approximately 16,800 first-time takers from US and Canadian medical schools that grant the MD degree were tested in both 2005 and 2006. First-time takers from non-US/Canadian medical schools numbered 13,488 and 14,585 for the same years. The pass rates for first-time takers from MD-granting US and Canadian medical schools were 94% in 2005 and 95% in 2006. Because failing examinees generally retake Step 1, the ultimate passing rate across test administrations is expected to increase to approximately 99% for this same group.

TABLE 1

2005–2006 STEP 1 ADMINISTRATIONS

Number Tested and Percent Passing

	2005		2006*	
	# Tested	% Passing	# Tested	% Passing
Examinees From US/Canadian Schools that Grant				
MD Degree	18,290	92%	18,167	93%
1st Takers	16,799	94%	16,818	95%
Repeaters**	1,491	65%	1,349	67%
DO Degree	1,331	72%	1,325	76%
1st Takers	1,265	73%	1,258	77%
Repeaters**	66	53%	67	52%
Total US/Canadian	19,621	90%	19,492	92%
Examinees From Non-US/Canadian Schools				
1st Takers	13,488	68%	14,585	71%
Repeaters**	5,911	39%	6,017	39%
Total non-US/Canadian	19,399	59%	20,602	61%

* Represents data for examinees tested in 2006 and reported through February 7, 2007.
** 'Repeaters' represents examinations given, not number of different examinees.

TABLE 2A

2004–2006 STEP 2 CK ADMINISTRATIONS

Number Tested and Percent Passing

	2004–2005*		2005–2006*	
	# Tested	% Passing	# Tested	% Passing
Examinees From US/Canadian Schools that Grant				
MD Degree	17,803	93%	17,714	93%
1st Takers	16,447	94%	16,493	95%
Repeaters**	1,356	69%	1,221	72%
DO Degree	399	85%	453	80%
1st Takers	386	85%	439	80%
Repeaters**	13	62%	14	57%
Total US/Canadian	18,202	92%	18,167	93%
Examinees From Non-US/Canadian Schools				
1st Takers	10,355	77%	11,305	77%
Repeaters**	3,470	50%	3,557	50%
Total non-US/Canadian	13,825	71%	14,862	71%

* Data for Step 2 CK are provided for examinees tested during the period of July 1 to June 30.
** 'Repeaters' represents examinations given, not number of different examinees.

Performance standards for Step 1 were reviewed in 2006. Data for consideration in the review included the results of an August 2006 survey regarding the appropriateness of current USMLE pass/fail standards for each of the Steps, described on page 43.

In addition to the survey, standard setting exercises were conducted using three panels of physicians and basic scientists. The 29 panelists were selected to represent a range of medical schools and medical specialties. Panelists had a broad range of roles such as course and clerkship directors, program directors, department chairs, and practitioners; a range of gender and ethnic groups was also included. Each panel met for 1½ days, engaging in a modified version of the Angoff standard-setting procedure. Each panelist saw a subset of the items appearing on the Step 1 exam. As a result of that review, a recommended minimum passing performance level was identified, representing the opinion of the panelists on the required mastery of examination content for medical licensure purposes.

At its December 2006 meeting, the Step 1 Committee considered the results of the surveys and the standard setting exercises, as well as data on recent trends in examinee performance and on the relationship of score precision to the pass/fail decision. As a result of this review, the Step 1 Committee decided to raise the three-digit score required to pass Step 1 from 182 to 185. The new minimum passing score was applied to Step 1 examinations for which the first day of testing was on or after January 1, 2007.

Step 2 CK

Table 2A provides details on the performance of examinees taking Step 2 CK in the 2004-2005 and 2005-2006 academic years. First-time takers from US and Canadian medical schools granting the MD degree numbered 16,447 for 2004-2005 and 16,493 for 2005-2006. First-time takers from non-US/Canadian medical schools numbered 10,355 and 11,305, respectively. The pass rates for first-time takers from MD-granting US and Canadian medical schools were 94% and 95%, respectively. As noted with Step 1, given the opportunity for this same group to repeat the examination, the ultimate Step 2 CK passing rate across test administrations is expected to increase to approximately 99% for this same group.

Step 2 CS

Table 2B provides details on the performance of examinees taking Step 2 CS in the 2004-2005 and 2005-2006 academic years. First-time takers from US and Canadian medical schools granting the MD degree numbered 15,814 for 2004-2005 and 16,611 for 2005-2006. First-time takers from non-US/Canadian medical schools numbered 12,708 and 13,235, respectively.

Examinees taking Step 2 CS must pass three separate subcomponents in order to record an overall pass on Step 2 CS. The three subcomponents are: Integrated Clinical Encounter (ICE), Communication and Interpersonal Skills (CIS), and Spoken English Proficiency (SEP). The overall Step 2 CS pass rate for first-time takers from US

TABLE 2B **2004–2006 STEP 2 CS ADMINISTRATIONS**
Number Tested and Percent Passing

	2004–2005*		2005–2006**	
	# Tested	% Passing	# Tested	% Passing
Examinees From US/Canadian Schools that Grant				
MD Degree	16,124	96%	16,936	98%
1st Takers	15,814	96%	16,611	98%
Repeaters†	310	96%	325	97%
DO Degree	31	87%	28	89%
1st Takers	31	87%	27	89%
Repeaters†	0	N/A	1	***
Total US/Canadian	16,155	96%	16,964	98%
Examinees From Non-US/Canadian Schools				
1st Takers	12,708	83%	13,235	85%
Repeaters†	973	83%	1,875	81%
Total non-US/Canadian	13,681	83%	15,110	84%

* Data for 2004-2005 are provided for examinees tested during the period of June 14, 2004 to June 30, 2005.
** Data for 2005-2006 are provided for examinees tested during the period of July 1 to June 30.
† 'Repeaters' represents examinations given, not number of different examinees.
*** Performance data not reported for categories containing fewer than 5 examinees.
N/A not applicable.

TABLE 3

2005–2006 STEP 3 ADMINISTRATIONS
Number Tested and Percent Passing

	2005		2006*	
	# Tested	% Passing	# Tested	% Passing
Examinees From US/Canadian Schools that Grant				
MD Degree	16,934	94%	17,427	94%
1st Takers	15,868	96%	16,395	96%
Repeaters**	1,066	69%	1,032	70%
DO Degree	58	95%	34	97%
1st Takers	54	94%	32	97%
Repeaters**	4	†	2	†
Total US/Canadian	16,992	94%	17,461	94%
Examinees From Non-US/Canadian Schools				
1st Takers	8,307	75%	9,003	75%
Repeaters**	3,712	52%	3,471	56%
Total non-US/Canadian	12,019	68%	12,474	70%

* Represents data for examinees tested in 2006 and reported through February 7, 2007.
** 'Repeaters' represents examinations given, not number of different examinees.
† Performance data not reported for categories containing fewer than 5 examinees.

and Canadian medical schools that grant the MD degree was 96% for 2004-2005 and 98% for 2005-2006. The pass rate for first-time takers from non-US/Canadian medical schools was 83% and 85%, respectively.

The USMLE Step 2 Committee is responsible for setting and monitoring pass/fail standards for the Clinical Knowledge (CK) and the Clinical Skills (CS) examinations. Initial standards for the CS examination were set by the Committee in November 2004. Because this process was completed with less than a full year's cohort of examinees, the Committee decided to closely monitor cumulative data on CS during the following year and to undertake a review of the CS standards in the spring of 2006.

Based upon the review, the Step 2 Committee decided to raise the performance levels required to receive a passing outcome on two of the three Step 2 CS subcomponents: ICE and CIS. No change was made to minimum passing requirements for the third subcomponent of Step 2 CS, SEP. The new passing requirements were applied to Step 2 CS examinations taken on and after July 16, 2006.

Step 3

Table 3 provides details on the performance of examinees taking Step 3 in 2005 and 2006. Data for 2006 are based upon examinees whose results were reported through February 7, 2007. First-time takers who were graduates of MD-granting schools in the US and Canada numbered 15,868 in 2005 and 16,395 in 2006. First-time takers who were graduates of non-US/Canadian medical schools numbered 8,307 and 9,003, respectively for the same years. For both 2005 and 2006, the pass rate for first-time takers who were graduates of MD-granting US and Canadian medical schools was 96%. Like Step 1 and Step 2 CK, the ultimate Step 3 passing rate, accounting for repeat attempts, is expected to increase to approximately 99% for this same group.

Comprehensive Review of USMLE

In 2004, the USMLE Composite Committee called for the formation of a Planning Task Force to plan a review of USMLE purpose, design, format and timing. Over the next year the Planning Task Force developed a plan for gathering opinion on the value and usefulness of the current program, using meetings with, and surveys of, a wide range of stakeholder groups.

Throughout 2006, meetings were held to gather feedback from members of the medical licensing community, medical student organizations, and members of the undergraduate and graduate medical education community. During this same period, surveys were used to assess key stakeholders' opinions as to the usefulness and quality of the current USMLE program. Surveys were sent to executives and presidents of state licensing authorities; medical school deans, academic affairs deans and student affairs deans; national and local representatives of medical student organizations, selected international medical school representatives; residency program directors; and samples of examinees.

The Planning Task Force also proposed the appointment of a committee that would be charged with beginning the review of the program. This committee, called the Committee to Evaluate the USMLE Program, has begun the process of reviewing the information gathered from the stakeholder surveys and focus groups summaries, and begun the process of identifying the general principles that should guide their deliberations and recommendations. The committee will continue their work during 2007.

USMLE and NBME Examination Committees

The high quality of the USMLE program is in large part due to the enormous effort of hundreds of volunteers who serve on USMLE committees. In addition to participation in test material development activities, medical school faculty members and practicing physicians serve on committees charged with item review, content-based standard setting activities, test blueprint construction, form review, and overall examination policy. Select committees developing test materials for the USMLE also provide guidance for staff in the development of the NBME subject examinations. The efforts of our test committees in meeting the extraordinary demands of the national licensure examination program exemplify the tradition of public service that marks the medical profession.

The USMLE program devotes considerable effort to assuring that test committee members adequately represent the content areas required for medical practice as well as the realities of clinical practice. As a result, USMLE test committee members constitute a "national faculty" of medicine drawn from medical schools and clinical practice settings across the United States.

Thirty-three percent of committee members are women. Minority racial/ethnic groups make up 9% of members. Seventy-nine percent hold a medical degree, 13% hold both a medical degree and another advanced degree, and 8% hold the PhD degree alone. A small number of members (<1%) hold degrees in nursing or other related fields. In terms of geographic distribution, 34% are from the south, 30% from the Midwest, 25% from the northeast, 11% from the west, and <1% from Canada and the Caribbean. Six percent of the committee members are either current or former members of state licensing boards. During the last five years, nearly all of the LCME-accredited medical schools have been represented on committees supporting USMLE.

It is with great pride that we list the names of the biomedical scientists, educators, and clinicians who have volunteered to serve on USMLE committees during 2006. The National Board, and the profession and public served by the USMLE, are indebted to these volunteers who contribute their expertise and energy to the creation of a national licensing examination system without peer in the world.

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Steubenville, Ohio

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Winchester, Virginia

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Harvard Medical International

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American Medical Association
Chicago, Illinois

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Federation of State Medical Boards

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Davidson, North Carolina

ENGLISH D. WILLIS, MD
Crozer-Chester Medical Center
Chester, Pennsylvania

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Hillsborough, California

PETER V. SCOLES, MD
National Board of Medical Examiners

GERALD P. WHELAN, MD
Educational Commission for Foreign Medical Graduates

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University of Vermont College of Medicine

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RANDY MCCULLOUGH, CPA
Federation of State Medical Boards

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National Board of Medical Examiners

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Brighton, Michigan

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University of Medicine and Dentistry of New Jersey
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Davidson, North Carolina

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National Board of Medical Examiners

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Steubenville, Ohio

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Crozer-Chester Medical Center
Chester, Pennsylvania

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RICHARD S. EISENSTAEDT, MD
Abington Memorial Hospital
Abington, Pennsylvania

N. STACY LANKFORD, MD
Medical Licensing Board of Indiana

USMLE Comprehensive Review Planning Task Force

Chair
GERALD J. BÉCHAMPS, MD
Winchester Surgical Clinic
Winchester, Virginia

MAX C. BUTLER, MD
Houston, Texas

ROBERT K. CRONE, MD
Harvard Medical International

JOSEPH C. FANTONE, III, MD
University of Michigan Medical School

LEWIS R. FIRST, MD, MS
University of Vermont College of Medicine

RUTH B. HOPPE, MD
Michigan State University College of Human Medicine

N. STACY LANKFORD, MD
Medical Licensing Board of Indiana

Committee to Evaluate the USMLE Program

Chair
ALFRED F. TALLIA, MD, MPH
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

SUZANNE T. ANDERSON
Meaghan Jared Partners, Inc.
Bellevue, Washington

ERIC P. BRASS, MD, PHD
David Geffen School of Medicine at UCLA.

CATHERINE S. CASEY, MD
Georgetown University School of Medicine

FRANK CELESTINO, MD
Wake Forest University School of Medicine

LYNN M. CLEARY, MD
SUNY Upstate Medical University College of Medicine

N. CARY ENGLEBERG, MD
University of Michigan Medical School

S. RYAN GREGORY, MD, MA
George Washington University School of Medicine and Health Sciences

JANICE HERBERT-CARTER, MD, MGA
Morehouse School of Medicine

LYNNE M. KIRK, MD
University of Texas Southwestern
Medical Center at Dallas
Southwestern Medical School

NAYAN K. KOTHARI, MD
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

N. STACY LANKFORD, MD
Medical Licensing Board of Indiana

GRAHAM T. MCMAHON, MBBCH
Harvard Medical School
Brigham & Women's Hospital

DAVID W. MUNTER, MD, MBA
Eastern Virginia Medical School

THOMAS J. NASCA, MD
Jefferson Medical College of Thomas Jefferson University

PETER RAGUSA
Bethesda, Maryland

R. RUSSELL THOMAS, JR, DO, MPH
Rice Medical Associates
Eagle Lake, Texas

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University of Texas Medical School at Galveston

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Medical Center at Dallas
Southwestern Medical School

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Wake Forest University School of Medicine

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Mount Sinai School of Medicine of New York University

JOSEPH P. GRANDE, MD, PHD
Mayo Medical School

S. RYAN GREGORY, MD, MA
Student Representative
George Washington University School of Medicine and Health Sciences

STEVEN A. HAIST, MD, MS
University of Kentucky College of Medicine

PETER J. KATSUFRAKIS, MD, MBA
Keck School of Medicine University of Southern California

CATHY J. LAZARUS, MD
Rosalind Franklin University of Medicine and Science
Chicago Medical School

LIONEL D. LEWIS, MA, MBBCH, MD
Dartmouth Medical Center

LINDA R. MARGRAF, MD
University of Texas Southwestern
Medical Center at Dallas
Southwestern Medical School

K. PATRICK OBER, MD
Wake Forest University School of Medicine

STEPHEN I. SCHABEL, MD
Medical University of South Carolina College of Medicine

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Chicago, Illinois

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Ohio State University College of Medicine and Public Health

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Morehouse School of Medicine

VIRGINIA K. PROUD, MD
Eastern Virginia Medical School

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SUNY Upstate Medical University College of Medicine

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The Feinberg School of Medicine

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College of Medicine

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Southwestern Medical School

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Saint Louis University School of Medicine

STEVEN A. LIEBERMAN, MD
University of Texas Medical School at Galveston

THOMAS C. VARY, PHD
Pennsylvania State University College of Medicine

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National Institute on Aging
Baltimore, Maryland

MICHAEL A. AINSWORTH, MD
University of Texas Medical School at Galveston

FRANK CELESTINO, MD
Wake Forest University School of Medicine

TERENCE S. DERMODY, MD
Vanderbilt University School of Medicine

RICHARD S. EISENSTAEDT, MD
Abington Memorial Hospital
Abington, Pennsylvania

WILLIAM J. ELLIOTT, MD, PHD
Rush Medical College of Rush University

N. CARY ENGLEBERG, MD
University of Michigan Medical School

JOSEPH C. FANTONE, III, MD
University of Michigan Medical School

ROBERT H. GLEW, PHD
University of New Mexico School of Medicine

JOSEPH GOLDFARB, PHD
Mount Sinai School of Medicine of New York University

LARRY S. GOLDMAN, MD
Wellsprings Health Associates
Chicago, Illinois

JOSEPH P. GRANDE, MD, PHD
Mayo Medical School

STEVEN A. HAIST, MD, MS
University of Kentucky College of Medicine

C. DARRELL JENNINGS, JR, MD
University of Kentucky College of Medicine

LINDA Y. JOHNSON, PHD
University of Texas Medical School at San Antonio

LYNNE M. KIRK, MD
University of Texas Southwestern Medical Center at Dallas
Southwestern Medical School

BRUCE M. KOEPPEN, MD, PHD
University of Connecticut School of Medicine

MAURICE D. KOGUT, MD
Centerville, Massachusetts

CATHY J. LAZARUS, MD
Rosalind Franklin University of Medicine and Science
Chicago Medical School

RUTH E. LEVINE, MD
University of Texas Medical School at Galveston

LIONEL D. LEWIS, MA, MBBCH, MD
Dartmouth Medical School

LINDA R. MARGRAF, MD
University of Texas Southwestern
Medical Center at Dallas
Southwestern Medical School

BARBARA M. MATHES, MD
Doylestown, Pennsylvania

K. PATRICK OBER, MD
Wake Forest University School of Medicine

HENRY J. RALSTON, III, MD
University of California, San Francisco,
School of Medicine

WILLIAM V. RASZKA, MD
University of Vermont College of Medicine

JERRY W. SWANSON, MD
Mayo Medical School

CHARLES M. WIENER, MD
Johns Hopkins University School of Medicine

BARRY WOLF, MD, PHD
Connecticut Children's Medical Center
Hartford, Connecticut

USMLE Step 1 Standard Setting Panels

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Bassett Healthcare
Cooperstown, New York

YVETTE M. CUA, MD
Emory University School of Medicine

CHARLES E. DREILING, PHD
University of Nevada School of Medicine

RANI S. GEREIGE, MD, MPH
University of South Florida College of Medicine

ZEEV HAREL, MD
Rhode Island Hospital
Providence, Rhode Island

KIM M. HIATT, MD
University of Arkansas for Medical Sciences
College of Medicine

ANDREW R. HOELLEIN, MD, MS
University of Kentucky College of Medicine

JOHN HWA, MBBS, PHD
Dartmouth Medical School

WENDY L. KINZLER, MD
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

PATRICIA S. LATHAM, MD
George Washington University
School of Medicine and Health Sciences

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University of California, Davis, School of Medicine

SOLOMON LIAO, MD
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STEVEN A. LIEBERMAN, MD
University of Texas Medical School at Galveston

FRED A. LUCHETTE, MD
Loyola University of Chicago
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University of Tennessee Memphis College
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University of Michigan Medical School

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Albert Einstein College of Medicine of
Yeshiva University

WOJCIECH PAWLINA, MD
Mayo Medical School

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Texas A & M University College of Medicine

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University of Michigan Medical School

JACOB J. STEINBERG, MD
Montefiore Medical Center
Bronx, New York

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Health Sciences Center

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Ohio State University College of Medicine

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Past Dean, Mercer University School of Medicine
Executive Director, Clinical Skills Evaluation Collaboration

DANIEL B. KIMBALL, JR, MD
Reading, Pennsylvania

NAYAN K. KOTHARI, MD
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

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Baylor College of Medicine

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University of California, San Francisco, School of Medicine

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Mayo Medical School

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Columbia University College of Physicians and Surgeons

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University of Michigan Medical School

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Southern Illinois University School of Medicine

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University of Wisconsin School of Medicine and Public Health

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Oregon Health and Science University School of Medicine

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Brown Medical School

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Virginia Commonwealth University School of Medicine

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Case Western Reserve University School of Medicine

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University of Cincinnati College of Medicine

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Eastern Virginia Medical School

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University of Kansas School of Medicine, Wichita

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Johns Hopkins University School of Medicine

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Mayo Medical School

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University of Michigan Medical School

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Medical College of Wisconsin

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Emory University School of Medicine

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Jefferson Medical College of Thomas Jefferson University

JAMES B. ALEXANDER, MD
University of Medicine and Dentistry of New Jersey Robert Wood Johnson Medical School

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Washington University School of Medicine

JAMES M. HASSETT, MD
University at Buffalo
SUNY School of Medicine and Biomedical Sciences

MARTIN S. KARPEH, JR, MD
Stony Brook University Health Science Center School of Medicine

D. SCOTT LIND, MD
Medical College of Georgia School of Medicine

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University of Miami Miller School of Medicine

STEVEN C. STAIN, MD
Albany Medical College

KIMBERLY J. TEMPLETON, MD
University of Kansas School of Medicine, Kansas City

PAULA M.TERMUHLEN, MD
Wright State University Boonshoft School of Medicine

Step 2 Clinical Knowledge Interdisciplinary Review Committee

ROGER L. BERKOW, MD
University of Alabama School of Medicine

LYNN M. CLEARY, MD
SUNY Upstate Medical University College of Medicine

STEPHEN R. DANIELS, MD, PHD
University of Cincinnati School of Medicine

DANIEL T. DEMPSEY, MD
Temple University School of Medicine

ELIZABETH DIMITRIEVICH, MD
University of South Dakota School of Medicine

LEWIS R. FIRST, MD, MS
University of Vermont College of Medicine

EMILY J. FROSCH, MD
Johns Hopkins University School of Medicine

RACHEL L. GLICK, MD
University of Michigan Medical School

BARBARA A. GOFF, MD
University of Washington School of Medicine

TANA A. GRADY-WELIKY, MD
University of Rochester School of Medicine and Dentistry

CHARLES H. GRIFFITH, III, MD, MSPH
University of Kentucky College of Medicine

CYRIL M. GRUM, MD
University of Michigan Medical School

JAMES C. HEBERT, MD
University of Vermont College of Medicine

RALPH F. JÓZEFOWICZ, MD
University of Rochester School of Medicine and Dentistry

DOUGLAS W. LAUBE, MD, MED
University of Wisconsin School of Medicine and Public Health

LEE A. LEARMAN, MD, PHD
University of California, San Francisco, School of Medicine

BENNETT L. LEVENTHAL, MD
University of Illinois at Chicago College of Medicine

KATHLEEN R. LISCUM, MD
Baylor College of Medicine

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Pennsylvania State University College of Medicine

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University of South Florida College of Medicine

ALISON J. WHELAN, MD
Washington University School of Medicine

PHILIP J. WOLFSON, MD
Jefferson Medical College of
Thomas Jefferson University

JOSEPH A. ZENEL, JR, MD
Oregon Health and Science University
School of Medicine

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Albany Medical College

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American College of Physicians
Philadelphia, Pennsylvania

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University of Vermont College of Medicine

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Medical College of Georgia School of Medicine

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Gynecology and Infertility Associates, PA
Dover, New Hampshire

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Uniformed Services University of the Health Sciences
F. Edward Hébert School of Medicine

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The Cleveland Clinic Foundation
Cleveland, Ohio

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and Dentistry

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Oakland, California

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University of North Carolina at Chapel Hill
School of Medicine

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University of Arizona College of Medicine

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University of Texas Southwestern
Medical Center at Dallas
Southwestern Medical School

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Mercer University School of Medicine

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Albert Einstein College of Medicine of
Yeshiva University

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Cleveland, Ohio

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Virginia Commonwealth University
School of Medicine

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University of Washington School of Medicine

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Michigan State University College of Human Medicine

JAMES B. ALEXANDER, MD
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

JAMES G. ARBOGAST, MD
West Virginia University School of Medicine

JOSEPH A. BACHICHA, MD
The Permanente Medical Group
Hayward, California

BETH BARNET, MD
University of Maryland School of Medicine

PATRICIA S. BEACH, MD
University of Texas Medical School at Galveston

L. D. BRITT, MD, MPH
Eastern Virginia Medical School

RANDOLPH J. CANTERBURY, II, MD
University of Virginia School of Medicine

W. GRADY CARTER, III, MD, MDIV
Mercer University School of Medicine

CATHERINE S. CASEY, MD
Georgetown University School of Medicine

CYNTHIA S. COOPER, MD
Gynecology and Infertility Associates, PA
Dover, New Hampshire

MICHAEL J. CZARNECKI, DO
George Washington University School of Medicine and Health Sciences

ANDREW K. DIEHL, MD, MSC
University of Texas Medical School at San Antonio

DENISE M. DUPRAS, MD, PHD
Mayo Medical School

MARY ANN FORCIEA, MD
University of Pennsylvania School of Medicine

MARK GIBSON, MD
University of Utah School of Medicine

VALERIE J. GILCHRIST, MD
The Brody School of Medicine at East Carolina University

STEVEN GO, MD
University of Missouri-Kansas City
School of Medicine

THOMAS E. GRETTER, MD
The Cleveland Clinic Foundation
Cleveland, Ohio

HARTWELL Z. HILDEBRAND, JR, MD
Rock Hill, South Carolina

GALICANO F. INGUITO, JR, MD, MBA
St. Francis Hospital
Wilmington, Delaware

SHELDON JACOBSON, MD
Mount Sinai School of Medicine of New York University

N. STACY LANKFORD, MD
Medical Licensing Board of Indiana

JAMES L. LEVENSON, MD
Virginia Commonwealth University School of Medicine

FRANKLIN A. MICHOTA, MD
The Cleveland Clinic Foundation
Cleveland, Ohio

DAVID W. MUNTER, MD, MBA
Eastern Virginia Medical School

RUBENS J. PAMIES, MD
University of Nebraska College of Medicine

MICHAEL P. ROSENTHAL, MD
Jefferson Medical College of Thomas Jefferson University

HOWARD M. SAAL, MD
University of Cincinnati College of Medicine

STEPHEN I. SCHABEL, MD
Medical University of South Carolina College of Medicine

ALFRED F. TALLIA, MD, MPH
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

ENGLISH D. WILLIS, MD
Crozer-Chester Medical Center
Chester, Pennsylvania

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ANDREW K. DIEHL, MD, MSC
University of Texas Medical School at San Antonio

JOHN G. GIANOPOULOS, MD
Loyola University of Chicago
Stritch School of Medicine

GALICANO F. INGUITO, JR, MD, MBA
St. Francis Hospital
Wilmington, Delaware

ROBERT D. UTIGER, MD
Brigham & Women's Hospital
Boston, Massachusetts

PATRICIA N. WHITLEY-WILLIAMS, MD
University of Medicine and Dentistry of New Jersey
Robert Wood Johnson Medical School

Step 3 Content Coding Sub-Committee

PATRICIA S. BEACH, MD
University of Texas Medical School at Galveston

L. D. BRITT, MD, MPH
Eastern Virginia Medical School

ANDREW K. DIEHL, MD, MSC
University of Texas Medical School at San Antonio

GERALD S. GOLDEN, MD
Philadelphia, Pennsylvania

N. STACY LANKFORD, MD
Medical Licensing Board of Indiana

USMLE Multimedia Task Force

PATRICIA S. BEACH, MD
University of Texas Medical School at Galveston

RANDOLPH J. CANTERBURY, II, MD
University of Virginia School of Medicine

ANDREW K. DIEHL, MD, MSC
University of Texas Medical School at San Antonio

LEWIS R. FIRST, MD, MS
University of Vermont College of Medicine

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Johns Hopkins University School of Medicine

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University of South Florida College of Medicine

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Saint Louis University School of Medicine

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Yale University School of Medicine

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Mayo Medical School

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University of Arizona College of Medicine

PETER D. DONOFRIO, MD
Wake Forest University School of Medicine

CYNTHIA J. FOREHAND, PHD
University of Vermont College of Medicine

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Mayo Medical School

MARK KRITCHEVSKY, MD
University of California, San Diego, School of Medicine

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University of Nebraska College of Medicine
Nebraska Medical Center

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Vanderbilt University School of Medicine

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University of California, San Francisco, School of Medicine

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National Board of Medical Examiners
3750 Market Street
Philadelphia, PA 19104