The pending arrival of the fifth iteration of the Medical College Admission test (MCAT) in April 2015 has caused nearly as much consternation as did the arrival of British forces in Boston in April 1775. Premedical students are faced with the dilemma of whether to hurry up and take the current version, sometimes before they have completed all the appropriate coursework, or take a chance on the new test. Advisors are trying to determine what to tell students about additional coursework that might be needed for the new sections. And medical school admissions committees are wondering how to compare scores from the current version to the new scoring system.

In an effort to dispel some of the anxiety, the APS Teaching Section sponsored a symposium on MCAT 2015: Are We Ready? at Experimental Biology 2014 in San Diego, CA. This article is a summary of the presentations in the symposium, along with links to resources for advisors, faculty, and students from the Association of American Medical Colleges (AAMC). The information was taken from the speakers’ Powerpoint slides and is presented here with their permission.

MCAT 2015: What Has Changed?
The first presenter was Rebecca Rice, Manager of MCAT2015 Outreach and Communication at the AAMC, speaking on what has changed in the new MCAT. Rice began by pointing out that the current version of the exam was launched in 1991 and that, since then, the competencies needed to be a good physician have evolved. The 21-member MR5 Committee worked for several years gathering information from many sources, including 2,700 medical school and baccalaureate faculty, medical students, and residents. They also considered the recommendations in three reports:


A Matter of Opinion
America’s Got Talent

Granted, I am dating myself when I make reference to Ted Mack and The Original Amateur Hour, but it is clear that America has been enamored with talent shows for well over 60 years. Although I may have started with The Original Amateur Hour, I have since migrated to American Idol, Dancing with the Stars, and other reality talent shows. Is it time for APS to start its own talent show?

It is well known that many scientists have musical talents, performing in chamber orchestras, singing in choirs, and playing in rock bands. Even the NIH Director, Francis Collins, has demonstrated musical talents with his guitar, promoting science and funding for NIH. But could APS...
The new exam is intended to be more conceptually focused. It
• emphasizes educational outcomes by asking examinees to apply what they’ve learned
• increases emphasis on scientific and critical reasoning skills
• asks examinees to think like scientists by bringing together concepts in the natural and social sciences, reasoning about research designs and results, interpreting data, including statistical analysis, and drawing conclusions.

The content and approach are organized around competencies from the expert panel reports. As with the previous exam, the content focuses on concepts that are taught in introductory college classes in biology, general chemistry, organic chemistry, and physics. The major addition on the scientific content side is concepts from introductory courses in biochemistry. A new section with concepts from introductory psychology and sociology has been added to underscore the role that behavioral and sociocultural factors play in health and illness.

The revised test will be organized into four sections rather than the current three, and the test itself will be longer: 7 hours, with breaks between each section. The four sections include:
1) Biological and Biochemical Foundations of Living Systems
2) Chemical and Physical Foundations of Biological Systems
3) Psychological, Social, and Biological Foundations of Behavior
4) Critical Analysis and Reasoning Skills (similar to the current Verbal Reasoning section), with paragraphs on topics from the humanities

The writing sample section is no longer being administered. Scientific inquiry and reasoning skills will be tested in all of the first three sections.

Physiology is Foundational Concept 3, “Complex systems of tissues and organs sense the internal and external environments of multicellular organisms, and through integrated functioning, maintain a stable internal environment within an ever-changing external environment,” and will comprise 25% of the Biological and Biochemical Foundations section.

Links to detailed descriptions of what is covered in each section can be found at https://www.aamc.org/students/services/343550/mcat2015.html.

The scoring scheme was embargoed at the time of the symposium but has since been released and is described at https://www.aamc.org/students/applying/mcat/mcat2015/admins/scores/. Each section will be scored from 118 to 132, with a midpoint score of 125 (Figure 1). Total scores will range from 472 to 528, with a midpoint of 500. Test takers will also be given percentile rankings.

The AAMC has developed numerous resources for advisors, students, and medical school admission committees that can be accessed at https://www.aamc.org/mcat2015/admins.
• Faculty and administrators can sign up for the quarterly Q-UPP e-Newsletters and webinars by going to https://www.aamc.org/students/applying/mcat/mcat2015/admins/newsletter/
Other resources for faculty include a new *Official Guide to the MCAT Exam*, a *What’s on the MCAT2015 Exam?* interactive tool, and a sociology and psychology textbook resource list (https://www.aamc.org/students/services/343550/mcat2015.html)

A new interactive course-mapping tool allows advisors to match the content and skills from the new MCAT to a student’s courses (https://www.aamc.org/students/applying/mcat/mcat2015/admins/resources/313190/thecoursemappingtoolforthemcat2015exam.html)

Additional teaching materials that support the new MCAT content can also be found in the Pre-health Collection within MedEdPORTAL’s iCollaborative (https://www.mededportal.org/icollaborative/about/initiatives/prehealth/); users must register for a free AAMC account to gain access to MedEdPortal.

The 2015 testing policies and calendar were released in late June 2014, and a full-length sample test will be available in September 2014.

For students, AAMC is partnering with the Khan Academy and Robert Wood Johnson Foundation to create video tutorials designed to help prepare for the MCAT2015 exam. There are currently 250 videos and 350 questions, and by fall 2014 there will be 500 videos and 1,000 questions (https://www.khanacademy.org/test-prep/mcat).

**Reassessing Medical School Prerequisites**

The next presentation was from Henry Sondheimer, Senior Director of Medical Education Projects for the AAMC, speaking on “The changing landscape of medical school prerequisites.” He opened with several quotes underscoring the fact that admission to medical school is not strictly about academic credentials, and he compared the current prerequisites to an old-fashioned telephone still being used in a world of smart phones.

Sondheimer pointed out that multiple factors are converging to make it timely for medical schools to reexamine their full admissions process (Figure 2). Healthcare needs and the structure of the American healthcare system are changing. Residency and undergraduate medical programs are placing increasing emphasis on competency-based education and assessment, and these changes need to be integrated with the move to more concepts-based teaching in undergraduate premedical education. The AAMC’s Holistic Review initiative, with its emphasis on admitting a diverse student body, encourages admissions committees to consider candidates’ attributes and experiences in addition to academic qualifications. And finally, the MCAT is changing, as previously described.

The AAMC has created an Admissions Initiative (https://www.aamc.org/initiatives/admissionsinitiative/) to support medical schools as they implement holistic and competency-based admissions. The situation is complicated because the call for revising admissions requirements often overlaps with changing curricula in the medical schools. Admissions committees need to be clear about what they want their admission requirements to do, and they should make sure there is alignment between their curriculum and the admissions requirements.

The AAMC surveyed the admissions requirements of the 141 schools that grant MD degrees and found they fit into six broad categories:

- 80% still have traditional course requirements (6 courses and a specified sequence of biology and chemistry)
- 9% have course recommendations rather than requirements
- 5% have minimal prerequisites (5 or fewer courses)
- 2% have competency-based admissions, with defined knowledge, skills, and behaviors that applicants must demonstrate they have acquired
- 1% require terminal courses, such as biochemistry or cell biology, with no specified prerequisites
- 3% use hybrid systems or are in the process of making the transition from one system to another

The change in admissions requirements from traditional courses to one of the alternate models is still in its infancy, but change is taking place.

The next two speakers talked about how their institutions have implemented new policies and programs in response to the call for universities and medical schools...
to broaden the medical school admission requirements from a set series of courses to a more flexible model.

**Changing Medical School Admissions: The Mississippi Experience**

Steven T. Case, Associate Dean for Admissions and Professor of Biochemistry at the University of Mississippi School of Medicine, presented the story of how his school moved from traditional prerequisites to a hybrid admissions requirement model. The process began within the medical school, but one of the first steps was to engage external stakeholders from the major undergraduate institutions that are the “feeder” schools for the medical school (three public universities and two liberal arts colleges). Provosts, deans, department chairs, faculty, and premedical advisors from the undergraduate institutions were introduced to the changes to the MCAT and to the idea of moving to competency-based admissions.

One immediate concern was whether the changes would require the development of new courses. To demonstrate that the change could be met without new courses, the schools mapped the entering medical competencies presented in the *Scientific Foundations for Future Physicians* (SFFP) report against their existing courses. The results showed that all the competencies could be met by the existing course inventory and that all schools had more than one path for acquiring the competencies.

An unexpected bonus was that some of the schools then reexamined how they are educating pre-health students. University of Mississippi is developing a “Population Health” course, and it may be expanded to an interdepartmental, multi-semester track that would cover natural and behavioral sciences and associated diseases prevalent in Mississippi. Millsaps College is already using a competency-based curriculum, and they now have a $1.4 million Howard Hughes Medical Institute grant to develop a series of courses that afford students the opportunity to acquire the SFFP competencies regardless of major.

Discussions at the medical school engaged a wide range of stakeholders beyond the Admissions Committee, including the Dean and Vice Dean of the School of Medicine, the Deans’ Council, the Admissions Task Force (ATF), the Curriculum Committee, and course directors and the residency program directors. After considering the reasons for change and different options, the ATF and Admissions Committee supported a flexible plan whereby applicants select the option by which they want to be evaluated for admission: terminal courses, entering student competencies (documented with course-competency maps), or novel curricula/course tracks. The decision met with support from both internal and external stakeholders, and the new criteria go into effect summer 2014.

**Broadening Student Competencies: The Bachelor of Science and Arts Degree**

The final speaker was Dee U. Silverthorn, who introduced a new bachelor of science and arts (BSA) degree program at the University of Texas at Austin. Although not designed exclusively for pre-health profession students, the BSA degree in the College of Natural Sciences will allow students to acquire a solid understanding of core science while simultaneously exploring disciplines such as public policy, medicine, anthropology, the arts, psychology, business, or communications. The hallmark of the BSA degree is that students must complete a 15-hour minor or 18- to 24-hour certificate in a field outside of science and engineering.

Currently, students who wish to major in biology have two options: a bachelor of science (BS) degree or a bachelor of arts (BA). These degrees both require 24 hours of upper division biology classes (about eight courses) in addition to a required three-course sequence of introductory biology and genetics. The new BSA only requires 12 hours of upper division biology, plus an additional 6 hours that may come from any science discipline. The BSA requires one semester of calculus plus one of statistics instead of one (BA) or two (BS) semesters of calculus, and it does not require chemistry beyond the introductory level. It also has more flexibility in the requirements for classes in the humanities, social sciences, languages, and arts.

One of the most appealing aspects of the BSA to students is the opportunity to study for a minor or certificate in a topic outside of science. Examples of certificates include:

- **Business foundations.** Finance, accounting, marketing, management, business law
- **Business and public policy**
- **Pre-health professions.** Classes in public health, cultural competency, healthcare policy, human and societal development, nutrition, and health
- **History and philosophy of science**
- **Communications in science**

Students can select the BSA degree for the first time in fall 2014, and already a number of students have decided to switch from other majors or tracks.