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Building a Better Physician — The Case for the New MCAT

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The Medical College Admission Test (MCAT), a prerequisite for admission to U.S. medical schools, currently consists of four sections: physical sciences, verbal reasoning, a writing sample, and biologic sciences. A 2004 Institute of Medicine report on “Improving Medical Education” and several years of evaluation identified a need to redesign the MCAT to better reflect physicians’ current challenges. Beginning in 2015, the test will include a section on behavioral and social sciences, and a section on critical analysis and reasoning will replace the writing sample. These revisions reflect the recognition that behavioral and social factors not only play major roles in health and illness, but also interact with biologic factors to influence health outcomes. Fundamental knowledge about behavioral and social sciences is critical to the effective practice of medicine.

The new subtest entitled “Psychological, Social, and Biological Foundations of Behavior” will measure that foundational knowledge with the use of stimulus paragraphs illustrating behavioral and social science constructs, followed by multiple-choice questions covering five content areas: ways in which people perceive and react to the world; factors that influence behavior and behavior change; factors that influence how we think about ourselves and others; ways in which culture and social differences influence well-being; and ways in which social stratification affects access to resources. The test will emphasize established theory and concepts as well as experimental and observational science. For example, the section on perception considers the integration of sensory processes through attention, cognition, memory, and language and the roles of stress and emotions in sensory processes. Clinical applications are reserved for medical school instruction, but students will be expected to have a sufficient foundation on which to build medical knowledge.

Why change the MCAT? Evidence indicates that behavioral and social factors profoundly affect health — as both determinants and key factors in preventive or therapeutic interventions (see box). In its 2011 report, *Behavioral and Social Science Foundations for Future Physicians*, the Association of American Medical Colleges (AAMC) emphasizes that health is influenced by biology, genetics, behavior, interpersonal relationships, culture, and physical environment. Furthermore, several models have been developed to estimate the contribution of these factors to increases in life expectancy in the United States. The models suggest that most of the increase since 1970 is attributable to a reduction in premature deaths

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from heart disease and stroke. Although the models vary, they suggest that between 23 and 46% of that reduction may be credited to medical care. But 44 to 72% of the reduction derives from modification of coronary risk factors, including tobacco use, lipid levels, and blood pressure. Indeed, reduced tobacco use and increased physical activity appear to be the largest contributors to improved life expectancy in the United States.¹ An analysis from Scotland has suggested that primary prevention, including modification of health-related behaviors, contributes about four times as much to health outcomes as medically based secondary prevention efforts.²

In addition to the importance of behavioral approaches to disease prevention, there has been significant progress in biobehavioral approaches to managing illness. Studies emphasize the value of cognitive and behavioral interventions in treating mental illness and substance abuse and managing chronic diseases. Behavioral and social sciences also inform evaluations of cognitive impairment, many neurologic diseases, and gene–environment interactions.

Disparities in health outcomes among races and ethnic groups persist. The Los Angeles Department of Public Health, for example, reports a 17.5-year difference in life expectancy between African-American men and Asian-American women. Los Angeles citizens in wealthy neighborhoods live about a decade longer than those in nearby communities where the poverty rate is high.³ Health behaviors and social circumstances help explain a substantial portion of the differences in life expectancy among groups defined by income, race, sex, or age.⁴ Tomorrow’s physicians will need to understand demographic changes, the effect of culture on adherence to medications, and the ways in which changes in incentives and payment systems will affect their practices.

Although most medical schools include some instruction in behavioral and social sciences, students arrive with varied levels of preparation in these fields. Just as in biology or chemistry, students are unlikely to be able to comprehend complex research studies in behavioral and social sciences without some basic background. The behavioral and social sciences are built on complex methods, theories, and a rich accumulation of evidence. Teaching cognitive–behavioral intervention to students without a background in learning theory is analogous to teaching pathophysiology to students who have not been exposed to basic biologic principles. The MCAT committee and the AAMC recognized that future physicians need better, standardized training in behavioral and social sciences before and during medical school.

These changes have encountered criticism. Some educators have suggested that students can gain a sufficient grounding by studying literature and humanities and by gaining greater exposure to people rather than by taking behavioral and social science courses.⁵ Though we agree that liberal arts and humanities are important, such reactions reflect a failure to distinguish between social sciences and humanities. The behavioral and social sciences emerged as a rejection of the subjective methods of early philosophers, in favor of the scientific method. Like other sciences, these fields are grounded in systematic methods and rules of evidence that progressively generate a body of knowledge. Behavioral science refutes or confirms conventional wisdom through systematic research. Perhaps the confusion

arises from the breadth of the behavioral and social sciences, which include psychology, sociology, anthropology, geography, economics, and cognitive science. These overlapping but distinct disciplines incorporate both scientific content (as tested by the new behavioral and social science subtest) and processes or habits of mind, interpersonal skills, and metacognitive skills (as captured by the critical analysis subtest). Both aspects are important for medical practice, and both require training.

It may be as important for aspiring physicians to understand patients' social, environmental, and personal characteristics and complex health care systems as to grasp basic biologic processes.

Some critics argue that nothing more can be crammed into premedical curricula. But nearly 70% of medical school applicants already take an introductory psychology or sociology course. Including this material on the MCAT will help to standardize curricula and ensure that new medical students arrive with the type of foundational knowledge that has long been required in the basic sciences. They will be expected to build on this foundation as the AAMC promotes increased attention to behavioral and social sciences in medical school. Dissemination and leadership from medical schools that have already integrated behavioral and social sciences into their curricula⁵ will ensure effective, efficient integration of these sciences.

Future physicians will need broader skills and knowledge than previous generations. It may be as important for aspiring physicians to understand patients' social, environmental, and personal characteristics and complex health care systems as to grasp basic biologic processes. Time in the medical school curriculum will therefore become increasingly precious, so students must arrive prepared to understand advanced concepts in each relevant field. Using the MCAT to screen for basic behavioral and social science knowledge is an important step in producing better-prepared physicians.

The MCAT is but one selection tool in a complex admissions process that properly includes attention to factors such as service, life experience, ethics, interpersonal skills, and professionalism. Behavioral scientists will need to effectively disseminate their work and translate core constructs for medical care, medical education, and applicant selection and training. Medical schools will need guidance in developing and delivering curricula that meet high scientific standards while best serving the needs of patients and society.

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Addressing Behavioral and Social Challenges in Medicine — A Sample Case

Behavioral and social challenges are common in the practice of medicine, and physicians with strong grounding in the behavioral and social sciences should be better prepared to evaluate and apply evidence-based approaches in addressing those challenges. For example, cases like the following are not uncommon in primary care:

Ms. Washington is a 76-year-old woman who presents to her new primary care provider with symptoms of recent weight loss, insomnia, and knee pain. Although she has been seen before in the clinic, Ms. Washington was lost to follow-up after the death of her husband approximately 18 months earlier. She has a history of hypertension, hyperlipidemia, type 2 diabetes, osteoarthritis, and depression. Her medical record shows that, although she has not been seen recently, her angiotensin-converting-enzyme inhibitor, statin, antidepressant, and metformin prescriptions have been refilled. She confesses that she doesn't like taking all those pills and has a hard time keeping them straight anyway. She is mostly sedentary, with a body-mass index of 27 and a self-reported 10-lb weight loss over the past 2 months. Her current blood pressure is 155/95 mm Hg, but her other vital signs and physical examination are unremarkable. She knows her blood sugar levels are "off," but she drinks an herbal "diabetes tea" and prays regularly to manage her health. She takes her anti-hypertensive medication when she feels that her blood pressure is high, as indicated by headaches, feeling warm, or feeling tense. She's worried that her recent weight loss might be an early warning sign of a serious illness like cancer.

Ms. Washington has three adult children and seven grandchildren. All of them except one granddaughter live in other states and visit only on holidays. Although she didn't graduate from high school, Ms. Washington later received her General Educational Development (GED) diploma and sent all her children to college. She has lived in the same house for over 40 years and manages to get by on her husband's small pension and her Social Security check. Her adult granddaughter lives with her but sometimes steals money to support occasional drug binges. Ms. Washington's closest friend died 4 months ago from colon cancer after an extended illness, during which Ms. Washington was the primary caregiver. When it all got to be too stressful, Ms. Washington developed the habit of relaxing with a couple of glasses of sherry each evening and taking extra antidepressants. She'd like to be more involved with her church and local senior programs but has limited access to transportation and increasing difficulty walking down her front steps. Although she'd like to be a "better patient" and come to clinic more regularly, she's afraid she'll use up all the visits covered by her managed Medicare plan.

Ms. Washington's new primary care provider wonders where to start.

Core behavioral and social science issues to address:

Medical nonadherence (causes, interventions)

Mental health (depression, anxiety, bereavement or grief)

Psychosocial stress and coping

Alcohol and drug abuse

Social supports, family dynamics
Complementary and alternative medicine
Spirituality
Health literacy
Patient education and counseling
Prevention and screening
Chronic disease management
Geriatric assessment and treatment adaptations
Health policy and insurance coverage

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