CENTER FOR EDUCATION

Shapiro Institute

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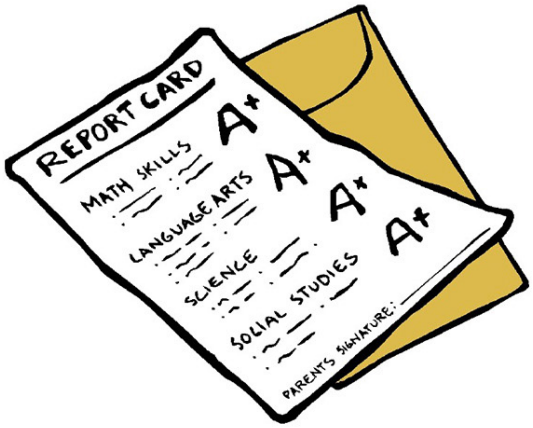
HARVARD MEDICAL SCHOOL

Assessing Competence



Newsletter

December 2024

ASSESSING COMPETENCE

Dear friends,

You want to be a commercial airline pilot. You go to flight school, you pass all your courses, do all your simulations. You're ready to go! Or are you….? No, you cannot captain a commercial airline until you have done 5,000 hours of flying as a co-pilot. Why does this rule exist? Experience matters. When "Sully" (Captain Sullenberger) landed a commercial airliner in the Hudson River following a sudden loss of power due to a bird strike, was he demonstrating the skills of a competent pilot or an expert pilot?

One of the definitions of an expert is "knowledge plus experience." As individuals progress in a field, they typically move from novice to competent to expert, assuming they are committed to life-long learning and willing to put in the time necessary to gain expertise. In addition, work by Anders Ericsson highlights the importance of focused feedback to a learner on their performance, a method described as "deliberative practice," as a key element in the process of acquiring expertise.

Gaining experience takes time. In medicine, it means multiple opportunities to see patients, gain a medical history, perform a physical exam, formulate a differential diagnosis and a course of evaluation and therapy. Even with the advent of artificial intelligence (AI), which is progressing at a rapid pace, the mastery of these skills is critical for one's ability to think critically about the patient, to provide accurate prompts for AI, and to discern when AI, which is based on pattern recognition and can be prone to errors, termed hallucinations, is going awry.

Despite this, there has been a movement in medical education in recent years to shorten the duration of medical school, with a focus on "competency based medical education." The concept is to move a student along when they have shown "competence." This is contrasted with "time-based medical education," i.e., that one should spend 4 years in medical school. While no one would advocate for or countenance "incompetent medical education," it is unclear that this approach considers the importance of experience.

At the graduate medical education level, duty hours have been reduced repeatedly over the past 20 years, and the competencies used in medical school are replaced by "milestones." Because of the restructuring of duty hours, however, the experience gained in residency has been significantly reduced. For example, medicine interns at BIDMC, and similar academic medical centers across the country, in the 1970s-90s routinely would admit 350-400 new patients over the course of the year, obtaining a history, performing a physical exam, formulating hypotheses for the patient's problem and outlining a course of evaluation and therapy, with follow-up over several days to see the outcome and correctness of the initial evaluation, making adjustments as necessary. Is the present reduction in hours reducing expertise in our graduates? Are we making too many compromises?

The answers to these and related questions about competence are areas for active research and discussion at BIDMC, Harvard, and across the country. In this issue, we will share some of that ongoing work.

- Richard M. Schwartzstein, MD

Should medical school grading be tiered or pass/fail?

By Alex Iyer

Medical school grading has implications for student wellbeing, motivation, equity, and residency selection. Yet, despite over 50 years of debate, there is no consensus on whether grading should be tiered or pass/fail. Looking through the literature on medical school grading, it's easy to become confused. Arguments and data are inconsistently cited and often outdated. It can also be unclear which arguments/data apply to which phases of medical school (i.e., preclinical, core clerkship, subinternship)

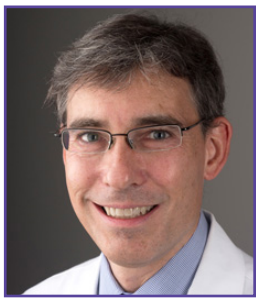
We conducted a scoping review to comprehensively synthesis relevant arguments and data supporting tiered vs. pass/fail grading. We reviewed all articles about medical school grading published since 2000. We identified (1) conceptual arguments about tiered vs. pass/fail grading in US medical schools, and (2) empirical data relevant to these arguments. We hope our findings will help researchers and educators frame and evaluate grading policy trade-offs. Here are findings from a few key domains.

- **Student wellbeing:** Several cohort studies suggest that pass/fail grading may improve short-term wellbeing in the pre-clerkship years. But it's unclear how pass/fail affects wellbeing during clinical clerkships. We also don't know whether pass/fail grading could displace stress to other parts of medical school (e.g., subinternships, research).
- **Motivation & educational climate:** With pass/fail grading, students self-report a higher "mastery orientation" and growth mindset. But there aren't good data on how other external motivators in the medical school environment (e.g., pressure to do more research) affect students' behaviors and priorities when they don't receive tiered grades for their clinical work.
- **Learning outcomes & priorities:** In the pre-clerkship years, pass/fail grading has been shown not to worsen students' performance on course exams and the USMLE. However, we don't know whether the same is true for pass/fail clerkship grading.
- **Validity & reliability:** Tiered grades don't seem to be very reliable, although reliability is better when averaging over multiple grades. We don't have good evidence regarding the validity of single tiered clerkship grades—in other words, are these grades actually measuring students' clinical competence, or are they influenced by other qualities that are less relevant, such as which preceptor happened to be observing the student?
- **Fairness & equity:** Multiple studies have identified differences in clerkship grades that tend to favor white students and women. These differences persist when controlling for things like MCAT score, undergraduate GPA, and USMLE scores.
- **Residency selection:** In general, there aren't many data on how different grading systems affect residency selection. While many people have argued that pass/fail grading weakens students' residency applications, this has not been proven.
- **Accountability to society:** It's not clear whether tiered vs. pass/fail grading affects the quality of care that medical students provide to their patients, or to their future patients after they become physicians.

This is a snapshot of what we found in our review. We hope that by rigorously evaluating the available arguments and collecting more high-quality data on grading, medical schools can develop assessment programs that benefit both learners and patients.

Alexander Iyer is a fourth-year medical student at Harvard Medical School. This essay is a summary of his work "The Conceptual and Empirical Bases for Tiered vs. Pass/Fail Grading in Medical School: A Scoping Review" by Alexander A. Iyer; Cameron Hayes; Bernard S. Chang, MD; Susan E. Farrell, MD, EdM; Anne Fladger, MLS; Karen E. Hauer, MD, PhD; Richard M. Schwartzstein, MD.

DR. CHRISTOPHER SMITH - DETERMINING COMPETENCY



Dr. Smith is a general internist at BIDMC and an Associate Professor in Medicine at HMS. He is also the Director of the Internal Medicine Residency Program and the Vice Chair for Education in the Department of Medicine.

Dr. Christopher Smith

In today's medical education, competency-based education (CBE) ensures that physicians not only possess knowledge but also demonstrate practical skills and sound judgment in real-world settings. Unlike traditional models focused on knowledge assessment and process-driven benchmarks, CBE cultivates and assesses competencies that evolve throughout a physician's career, fostering lifelong learning and adaptive expertise.

Defining Competence and Competency

The terms "competent" and "competence" have distinct implications in CBE. Being competent refers to achieving adequate knowledge, skills, and attitudes (KSA) for a specific context, measured relative to a learner's stage. For example, what is required to be competent as a third-year medical student differs from an intern in the ICU or a faculty physician in primary care. This level-appropriate benchmarking progressively guides learners from foundational skills to advanced competencies.

In contrast, competence reflects a lifelong journey toward excellence, built on evolving KSA through experience, introspection, and feedback. As surgeon Lord Rodney Smith observed, it may take a lifetime to master the nuanced decision-making integral to medical practice.

Historical Evolution: From Knowledge Exams to Direct Observation

The shift from knowledge-based assessments to CBE spans over a century. The 1910 Flexner Report critiqued the apprenticeship model of medical education, leading to oral and later multiple-choice examinations. Process-driven standards emerged, emphasizing minimum cases or hours completed but fell short of evaluating real-world patient care skills. CBE addresses this gap by emphasizing direct observation of learners in clinical settings. Frameworks like George Miller's Pyramid of Assessment assess what learners "do" at the bedside, advancing beyond what they "know."

The Six Core Competencies and Real-World Assessment

In the early 2000s, the Accreditation Council for Graduate Medical Education (ACGME) introduced six domains of competency: medical knowledge, patient care, professionalism, interpersonal and communication skills, systems-based practice, and practice-based learning and improvement. These domains integrate skills and attitudes for effective, compassionate, patient-centered care.

Assessing performance through activities like simulations and bedside evaluations provides authentic insights into learners' abilities. This shift replaces subjective, normative judgments with criteria-based evaluations, focusing on a physician's practical impact on patient care.

Challenges of Competency-Based Assessment

Competency-based assessments face challenges. While tools like the ACGME Milestones offer clear indicators of learner development, they may seem overly reductionistic, risking loss of the holistic view of a physician's growth. Albert Einstein's adage, "Not everything that counts can be counted," highlights this limitation.

Frameworks like RIME (Reporter-Interpreter-Manager-Educator) complement analytic milestones by encouraging integrated evaluations of learners' progression. Combining these approaches provides a balanced assessment of measurable milestones and the nuances of clinical expertise.

Frequent observations and evaluations over time are essential, as learner performance varies across

contexts. The Cambridge Model emphasizes considering external factors, such as environment and personal challenges, when evaluating learners. This variability underscores the importance of multiple assessments.

Toward Continuous, Formative Feedback

CBE assessments should also promote learning. Historically, feedback occurred at the end of rotations, offering limited opportunities for improvement. With CBE, frequent observations enable continuous, formative feedback, helping learners identify areas for growth. Targeted, timely feedback fosters lifelong learning and iterative development.

Entrustable Professional Activities (EPAs) and the Cambridge Model

To bridge competency-based education with clinical readiness, some in the medical field are now adopting Entrustable Professional Activities (EPAs), which are framed around recognizable professional activities critical to a specialty. EPAs incorporate specific milestones into broader, summative assessments of specific activities. EPAs link various milestones together into broader specific activities such as giving or receiving a handoff in transitions of care or holding a family meeting. Thus, EPAs can facilitate the evaluation of KSA combined into a specific professional activity.

Conclusion

Competency-based education represents a paradigm shift in medical training, moving from process-oriented assessments toward a holistic, skills-based evaluation system that seeks to produce well-rounded, highly capable physicians. Through a combination of milestone-based assessments, Entrustable Professional Activities, and the nuanced understanding provided by synthetic models like RIME, educators can provide learners with the tools needed to succeed in real-world practice. This model of assessment prioritizes not only what physicians know but also what they can do, ultimately ensuring that future generations of healthcare providers are not only knowledgeable but also fully prepared to meet the complex demands of patient care.

EDUCATION RESEARCH CORNER

Study to explore generational views on professionalism

Daniel Ricotta, MD

In this issue's Spotlight on Scholarship, we highlight one of the Institute's ongoing research projects, the Generational Views on Professional Values and Behaviors study. Led by Dan Ricotta, MD from the BIDMC Department of Medicine and Eva Aaagard, MD at Washington University School of Medicine, this project originated from the 2023 Millennium Conference, which brought together medical education leaders from various institutions to discuss professionalism and professional identity formation in medicine.

The Generational Views Study uses a sequential mixed-methods approach to explore whether and how professional values and behaviors differ across generations of medical learners and educators. The aim of this study is to enable educators and learners to develop a shared language and understanding of professional values and to support ongoing discussion and growth in the integration of these values.

1. In the first phase, we are surveying medical students, residents, fellows, and faculty members at Harvard Medical School and Beth Israel Deaconess Medical Center. Our survey examines (1) how generational cohorts define professionalism, and (2) whether participants expect generational differences in any specific elements of this definition.

2. In the second phase, we will facilitate focus group discussions to explore underlying reasons for generational differences and similarities. Participants will discuss scenario-based vignettes that present competing professional values, allowing us to explore how medical learners and educators interpret and apply these values in real-world contexts.

The Shapiro Institute is collaborating with teams from the Washington University School of Medicine and The Robert Larner College of Medicine at The University of Vermont on this multi-institutional study.

By gaining a deeper understanding of generational perspectives on medical professionalism, we can develop more effective strategies for fostering these values in medical education in a way that is responsive to generational and social changes. Stay tuned for updates on this exciting work!

MILLENNIUM CONFERENCE 2025: Artificial Intelligence

Shapiro Institute to Host Millennium Conference 2025 on Artificial Intelligence

The Shapiro Institute in collaboration with the Josiah Macy Jr. Foundation and in partnership with the Association of American Medical Colleges (AAMC), is thrilled to host the Millennium Conference 2025, taking place April 28–30, 2025, at the Babson Executive Conference Center in Wellesley.

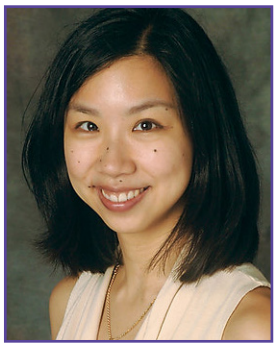
This year's conference, "Artificial Intelligence: Prompts, Hallucinations and the Future of Medical Education," will examine the present and future uses of artificial intelligence (AI) in medicine and the impact of this technology on medical education. The goal, ultimately, is to prepare medical educators to not only meet the challenges and maximize the potential of AI, but to harness the tool to increase efficiency of teaching and assessment and to identify those elements of a physician's responsibilities that should not be delegated to the computer while ensuring that we prepare current medical students for an uncertain future of clinical practice.

Millennium Conference 2015

Introducing the Nation's First Diabetes and Obesity Fellowship

The Joslin Diabetes Center and BIDMC have launched the first fellowship in the nation to combine Diabetes and Obesity training, designed specifically for primary care physicians. This one-year clinical program includes advanced training in diabetes care, such as hybrid-closed loop artificial pancreas technology, and is supported by the American College of Diabetology. With the rising complexity of diabetes management and a growing shortage of specialists, this fellowship addresses critical gaps in care by equipping PCPs with the expertise needed to manage Type 1 and complex Type 2 diabetes. The program aims to serve as a model for similar fellowships across the country.

Dr. Jacqueline Chang Named Program Director of the Sleep Medicine Fellowship Program



The GME office extends a warm congratulations to Dr. Jacqueline Chang, Instructor of Medicine in the Pulmonary Division who was recently promoted to Program Director of the Sleep Medicine Fellowship Program. Dr. Chang, has over 15 years of experience teaching Pulmonary fellows at BI and has also been actively involved in the teaching and supervision of medical students and residents since joining the HMS faculty.

GME Financial Fitness Seminar Series

The GME Wellness Committee invites housestaff to our ongoing seminar series in 2025! Seminars will be held in a Hybrid format, zoom and in person. Please RSVP using the link below to receive more details:

https://t.ly/okLM1 or reach out to Ritika Parris: rparris@bidmc.harvard.edu with any questions.

Upcoming sessions will include:

Dec. 11, 2024: Managing Cash Flow, Savings & Student Loans
Feb. 2025: Disability Insurance
March 2025 (virtual): Buying vs Renting
April 2025: Cash Flow and Savings Part 2

Reconstructive Surgery Fellowship

Since August, 2024, BIDMC is proud to serve as the primary sponsor for the Urogynecology and Pelvic Reconstructive Surgery (UPRS) Fellowship. Formerly based at Mount Auburn Hospital, the transition to BIDMC has enhanced clinical and research opportunities for fellows, solidifying BIDMC's leadership in advancing this specialized field. Now in its 25th year, the fellowship continues to provide robust training and celebrates its legacy as part of an emerging specialty in women's health.

Coaching for Growth and Development at BIDMC

Support trainees in enhancing their interpersonal, professional, and personal growth through professional coaching. This program helps trainees:

- Set and achieve meaningful goals
- Contribute more effectively in team environments
- Improve accountability and professionalism
- Strengthen communication and interpersonal skills
- Achieve better work/life satisfaction

For additional information reach out to Ritika Parris at rparris@bidmc.harvard.edu

Program Coordinator Wellness Committee

The mission of the PC Wellness Committee is to promote the health and wellness of Program Coordinators at BIDMC through education and initiatives that:

- Research coordinator wellness and burnout at BIDMC
- Increase awareness of factors and resources contributing to well-being
- Encourage habits of wellness
- Promote professional development
- Increase social engagement among PCs

For more information contact committee leaders Dafny Argueta and Olivia Ezekwelu.

Dr. Nicole Dubosh named Director of Faculty Development


Dr. Nicole Dubosh

Dr. Nicole Dubosh was recently named the Shapiro Institute's Director of Faculty Development. Dr. Dubosh will spearhead programs aimed at enhancing the teaching skills of both career educators and c linical faculty. In addition to working on the Millennium Conference, Dr. Dubosh will be pursuing formal reviews of many of the career development programs currently offered through the Shapiro Institute.

What are you most looking forward to in your new role? "I am looking forward to working with all of the outstanding faculty in the Shapiro Institute and across the medical center. I am ready to continue supporting the great efforts and advancing the quality of medical education to the next level at BIDMC."

What objective are you most looking forward to achieving? "The faculty at BIDMC are tremendously talented educators and the Shapiro Institute serves as a national example for programming and developing medical education. I look forward to further advancing and disseminating our innovative approaches to education and advancing our faculty's work."

Dr. Huma Farid named Director of BIDMC Academy


Dr. Huma Farid

Dr. Huma Farid was recently appointed Director of the BIDMC Academy, succeeding Dr. Daniel Ricotta. In her new role, Dr. Farid will lead efforts to foster the academic growth and professional development of healthcare professionals throughout BIDMC.

What are you most looking forward to in your new role? "Like all of us, I thrive in a community that reflects my interests and values, and I am very much looking forward to continuing to build a community of medical educators who are dedicated to teaching and scholarship. I hope to create innovative programming that will bring the community together to create bonds and sources of mutual support."

What objective are you most looking forward to achieving? "We have so many talented educators and innovators at BIDMC, and I am looking forward to giving them a platform to share their passion and learning from them!"

The Shapiro Institute Hosts Jonathan Haidt, PhD

On November 21, The Shapiro Institute hosted the 2024 Aaron Thurman Lecture on Humanism in Medicine, part of Medical Education Grand Rounds. This year's lecture was by Jonathan Haidt, PhD, Social Psychologist at NYU and bestselling author of *The Coddling of the American Mind* and *The Anxious Generation*.

Dr. Haidt delivered an insightful presentation titled, "What the phone-based childhood is doing to teen mental health, and why some researchers can't see it." The lecture, held via Zoom and attended by over 200 attendees, addressed critical issues, including

- Significant shifts in teen mental health since the early 2010s.
- The importance of free play and independence in mitigating childhood anxiety.
- Why social scientists differ in their interpretations of mental health data.

This session provided attendees with valuable perspectives on the intersection of technology, childhood experiences, and mental health, sparking meaningful discussions about the future of medical education and care.

To watch a recording of the lecture, please visit our website at: www.shapiroinstitute.org/thurmanlecture

DEPARTMENT NEWS

Shapiro Institute Welcomes China's Tongji Hospital and Xiangyang Central Hospital

On Tuesday, December 3, the Shapiro Institute welcomed a delegation from Tongji Hospital and Xiangyang Central Hospital in China. Dr. Molly Hayes greeted the group and delivered a presentation on the rich history of BIDMC, its longstanding affiliation with Harvard Medical School, and the unique qualities that set BIDMC apart.

The day featured a series of engaging sessions: Dr. C. Corey Hardin and Dr. Mary Beth Hamel of the New England Journal of Medicine discussed clinical reviews and the design of high-quality clinical research studies. Stephen Craft then led a tour of the Shapiro Simulation and Skills Center, highlighting BIDMC's innovative training facilities.

The visit concluded with Dr. Richard Schwartzstein exploring critical thinking and the training of future doctors, followed by a lively Q&A session.

From all of us at the Shapiro Institute for Education and Research, Happy Holidays and a Joyous New Year!

Carl J. Shapiro Institute for Education and Research

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