Multispecialty Trainee Perspective: The Journey Toward Competency-Based Graduate Medical Education in the United States

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What Is Competency-Based Medical Education?

The aim of graduate medical education (GME) is to train competent physicians with the necessary abilities to care for patients.[1,2] However, the design of early medical training programs was highly variable and lacked educational standards. Therefore, in the early 1900s, Abraham Flexner was tasked with assessing the state of medical education in the United States.[3] The resulting Flexner Report highlighted the importance of standards in medical training.[3]

Nearly a century after the Flexner Report, a resurgence in awareness of medical education shortcomings arose in conjunction with reports from the National Academy of Medicine (formerly the Institute of Medicine) that highlighted safety and quality problems in US health care.[4,5] As a result, the Accreditation Council for Graduate Medical Education (ACGME) launched the Outcome Project in 2001 to better support the professional development of residents and fellows while reconfiguring standards for GME training programs.[6,7] This project shifted the focus of GME accreditation requirements and policies to measurable educational outcomes of programs and learners.[6] The 6 general core competencies (CCs) were developed to support the transition to an outcomes-based GME system by focusing on learning experiences and assessments for the following educational outcomes: patient care and procedural skills, medical knowledge, professionalism, interpersonal and communication skills, practice-based learning and improvement, and systems-based practice.[2] In 2013, the ACGME introduced Milestones 1.0 as a tool to describe an individual's learning progression within the CCs.[7] Milestones 2.0 were more recently implemented as a planned improvement based on research, feedback, and comments from multiple medical education stakeholders seeking simplification and harmonization of most of the competencies, except for patient care and procedural skills and medical knowledge.[8] There was also increased support for GME community engagement and resource sharing.[8] Some specialties have developed entrustable professional activities (EPAs) to complement the CCs and Milestones for better assessment of observable and measurable tasks or responsibilities in the clinical learning environment.[9] Although there are currently various levels of EPA integration in residency, the American Board of Surgery is the first specialty board to require the use of EPAs for resident assessment and determining eligibility for certification.[10]

Despite the availability of outcomes-based assessment tools, a structure and process-based medical education model (often referred to as fixed-time medical education) remains the predominant model for GME.[11] This traditional model emphasizes exposure to specific educational experiences (eg, rotations on particular units such as the intensive care unit or emergency department) and hypothesizes that specific clinical experiences will enable acquisition of needed abilities. Competency-based medical education (CBME) is an outcomes-based model where the CCs and Milestones define the educational outcomes, and trainees are individually assessed and advanced for competency achievements in required medical practices. However, transitioning to a CBME model, even without changing the fixed-time structure still present in GME, will take substantial effort and time.[11] At present, nearly all ACGME-approved programs in the United States adhere to a fixed-time format, but there are pilot CBME programs underway to trial this new paradigm.[11] As this movement takes hold, trainee engagement in development and implementation of CBME is likely to be invaluable for a successful transition. Therefore, the purpose of the current article is to describe trainee engagement and future participation in CBME discussions and to provide their insights about the transition to CBME.

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Trainee Engagement in CBME Discussions

Over the past year, residents and fellows participated in discussions about the development and understanding of a CBME model for GME. Specifically, the ACGME provided 2 meeting opportunities for trainees to engage in CBME discussions.

Inaugural CBME Symposium

In August 2022 the ACGME and American Board of Medical Specialties (ABMS) hosted the inaugural CBME Symposium as a 2-day event.[12] The symposium was designed to accelerate the transition to CBME in the United States, and representatives from all major medical specialties participated.[12]

The symposium had several key objectives. A primary objective was to recognize the essential role of the 5 core components of the framework of CBME: outcome competencies, sequenced progression, tailored learning experiences, competency-focused instruction, and programmatic assessment.[12] This framework explicitly highlights the intensely developmental process of becoming a physician specialist. Subsequent objectives involved identification of the policy, financial and administrative facilitators for spreading and innovating CBME, and the barriers that could inhibit its growth.[12] Desired outcomes were to encourage collaboration within and across specialties, to create actionable plans that supported innovation and implementation, and to promote recommended changes to ACGME and ABMS procedures for CBME.[12]

Attendees of the symposium included leaders from the ACGME and ABMS, ACGME review committee chairs, designated institutional officials, department chairs, program directors, faculty members, and learners. The symposium was the most recent large-scale engagement of medical education stakeholders in the CBME conversation and the first to include residents and fellows from several different specialties. During roundtable discussions, trainees shared their current experiences with fixed-time medical education and their thoughts about the impact of CBME on future training. This symposium and its follow-up in June 2023 highlighted the importance of trainee perspectives and involvement for successful implementation of CBME.

Council of Review Committee Residents Meeting

The Council of Review Committee Residents (CRCR) is 1 of 3 advisory councils at the ACGME. The CRCR is composed of approximately 30 residents and fellows from different specialties, and it meets twice a year to discuss important GME issues and topics.

After the inaugural CBME Symposium, the CRCR hosted a small-group discussion on the topic during its fall 2022 meeting. Eric Holmboe, MD, Chief Research, Milestone Development, and Evaluation Officer, ACGME, was invited to discuss the importance of trainee engagement and introduce the principles of CBME. His introduction included key definitions, descriptions, and principles of outcomes-based medical education, core components framework, general competency framework, stages of the Dreyfus developmental model, mastery-based learning, and curriculum design. He also discussed how quality of instruction (ie, the curriculum) affects GME outcomes. Next, CRCR members divided into smaller groups to discuss prompts regarding facilitators and barriers to CBME implementation, local programmatic opportunities for advancement, and future efforts of the CRCR and ACGME for improving CBME implementation.

During these small group discussions, participants asked questions about the transition to CBME. A full list of these questions is provided in the TABLE. As national medical education leaders contemplate this transition, these questions may illuminate areas that require additional consideration and clarity.

Trainees as Coproducers for Future Participation in CBME

Coproduction has been defined as key stakeholders "making better use of each other's assets, resources and contributions to achieve better outcomes or improve efficiency."[13] In health care, coproduction is specifically defined as "the interdependent work of users and professionals who are creating, designing, producing, delivering, assessing, and evaluating the relationships and actions that contribute to the health of individuals and populations."[14] Before recent discussions, medical educators worked to define outcomes and competency-based assessment tools (eg, CCs, Milestones, EPAs) while simultaneously shaping the educational system to support trainee achievement. However, given the continuing drive to establish CBME outcomes and processes, the CRCR proposed the inclusion of trainee voices to set the stage for coproduction. Further, because the transition to CBME requires partnership at all levels of medical education, the CRCR also highlighted the role of faculty as advocates for coproduction through partnership with trainees and promotion of bidirectional learning and growth.

Trainees as Context Experts

The trainee perspective is invaluable for true coproduction because their personal understanding of the

TABLE
Questions From Participants at the Council of Review Committee Residents Meeting on the Transition to Competency-Based Medical Education (CBME) System

General Question Topic	Actual Questions
Questions regarding the trainee who achieves competency "early" and in advance of graduation in a fixed-time learning environment	If a resident meets the minimum level of competencies "early" (before graduation in a fixed-time learning environment), will they graduate in advance of their peers? If this happens, what will the graduating resident do if awaiting subspecialty training? How will they maintain salary and benefits? Will there be enough clinical coverage for patient care in their absence?
	How will this affect the trainee's coresidents and the distribution of clinical responsibilities?
	Given increasing concerns about burnout in health care and medical education and the potential for increased educational and clinical burdens on trainees in a CBME system, how will the appropriate balance be achieved?
	If a resident does not graduate early, what new or ongoing responsibilities will be asked of them?
Questions regarding the trainee who has not met the minimum level of competency before graduation in a fixed-time learning environment	If the period of training must be extended beyond the typical time-fixed parameters of traditional GME, what logistical and planning measures will need to be considered?
	Who pays for extended training beyond the typical training term allocations in fixed-time medical education?
	What are the unintended consequences and benefits of extending training beyond the typical fixed-time medical education parameters of the current graduate medical education training system?
Questions about faculty in a CBME system	If faculty have to dedicate additional teaching and resource support for trainees who are not meeting expected competencies, would there be less support available for other residents?
	Will faculty have dedicated time and support to provide ongoing, or possibly increased, feedback to trainees?
	Will faculty be expected to undergo development and training on CBME-based feedback delivery, preservation of the psychologically safe learning environment, and bias mitigation?
	Are faculty being engaged in the CBME conversation more, less, or the same as trainees? How does this affect their investment in the change?
Other trainee questions related to CBME	Could CBME potentially increase the attrition rate of residents?
	Considering the significant amount of medical student debt many trainees carry, how will CBME and time-variable training durations affect trainees' potential earnings and loan interest accruement?
	What are best practices for fostering an inclusive, bias-aware, and psychologically safe learning environment in a CBME system?
	What are the implications for undergraduate medical education and continuing medical education if graduate medical education switched to a primarily CBME system?

learning environment can facilitate the development of processes within the system.[15] Since residents and fellows are actively participating in medical education, they have an intimate understanding of the current system and, thus, have the ability to quickly assess various implementation efforts.

Despite the benefits, asking residents to pursue leadership in the CBME coproduction process early in their GME training may be unrealistic due to their focus on learning the nuances of their chosen specialty and hospital processes. However, as residents gain experience with the GME process, they become ideally situated to participate in the coproduction process at the national or program level. As such, the CRCR suggested that coproduction should adopt a graduated autonomy model similar to that of other practices in medical education, where involvement increases as trainees progress through training. Ideally, such involvement would also promote development of lifelong learning, where trainees become more invested in their personal educational process as they progress through it.

Trainee Insight and Opportunities for Coproduction

After considering trainees as content experts for the coproduction process, the CRCR decided to also identify areas where trainees are already involved. Further, such knowledge may suggest future opportunities for trainee engagement with CBME.

Trainees have already influenced the GME training environment in other arenas. For example, residents and fellows ignited the national discussion about parental leave policies,[16] which prompted subsequent revisions to ACGME institutional program and specialty-specific licensing board requirements. A former CRCR discussion about meaning in medicine resulted in the national *Back to Bedside* initiative,[17] which is now in its third cycle of research funding for resident-driven projects. Regarding CBME, senior trainees already make daily contributions through supervision and feedback to junior learners in various patient care settings. Trainees have also played a role in development of the Milestones Guidebook for Residents and Fellows.[2] As participants of clinical symposia and other national dialogues, residents are stepping up to offer meaningful contributions and insight into CBME.

During the fall 2022 CRCR meeting, participants suggested that trainees have the ability to influence and improve many domains related to CBME, such as self-assessments of Milestones, evaluation of educational opportunities and areas for potential programmatic and learning process adaptation, and curriculum development. On a personal level, trainees can and should contribute to their own competency assessment through periodic and honest self-reflection and Milestone assessment throughout training. The CRCR believes that trainees can also provide local insight about the educational strengths and shortcomings of their home programs. Further, trainee experiences may inform a more globally useful understanding of assessment tools, including those that drive competence and those that may unintentionally detract from it. As such, participants of the CRCR meeting also identified how trainees could contribute to the clinical competency committee of their home program. Specifically, their involvement during discussions of competencies could facilitate development of assessments and determine the value of various assessment types. Given the immersion of trainees in the health care delivery system, their knowledge qualifies them to comment on CBME implementation strategies. For instance, trainees can identify when prioritization of patient care supersedes the ability to participate in an educational experience, when a learning strategy will be an undue burden, or when certain adaptations can be easily incorporated into patient care delivery. On the national level, residents must continue to be involved in discussions of CBME. Although trainee voices have been previously outnumbered in such forums, the CRCR noted that additional engagement could encourage trainee investment and allow meaningful contributions for the establishment of realistic, achievable steps and national standards of competence that promote readiness, board eligibility, and other end goals.

Expectations of the Trainee

The CRCR supports the integration of trainees into discussions for planning and implementation of CBME, and it also recognizes that the transition to a CBME learning model will require flexibility and adaptation on the part of the trainee. Transitioning to a model that advances trainees based on their attainment of competence will depend on robust programmatic assessment (eg, trainee self-assessments, case logs, compiled feedback, simulation, multisource feedback, and other documented experiences) to demonstrate growth and achievement of Milestones during training. Therefore, trainees will need to learn the nuances of this educational model and recognize the value of participating in new or different assessment methods.

Importantly, trainees will need to adopt a growth mindset, where they are engaged in self-assessment and receptive to feedback.[18] With this shift, they should be able to identify shortcomings, either independently or with the help of a coach. Understandably, these tasks may be difficult if the learning environment does not foster a culture of psychological safety.[19] Trainees should not feel penalized when making mistakes, asking questions, or seeking help.[19] A previous study investigating CBME implementation in Canadian programs reported 9 distinct assessment burdens on residents.[20] Thus, learners and the training culture must adapt together to keep the learning environment psychologically safe so there can be honest assessment of competence.

Next Steps

Transitioning fully to CBME in GME will require thoughtful attention to detail as change becomes reality. The burden of this systemic change should not fall on any single organization and will require the support of the entire house of medicine. Furthermore, providing time, resources, coaching, and support for trainees and medical educators is essential to innovate, explore, and create meaningful change. During this dynamic period, we must continue to encourage coproduction with trainees and facilitate

active understanding of their perceptions[21] of this major change in medical education. Residents are trained to be lifelong learners and, with the careful implementation of CBME, they will continue to develop the necessary skills to serve the public and establish a growth mindset for their professional careers.

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