In 2013, the AMA Council on Medical Education formed a Competency Alignment Task Force to review and disseminate information about the current state of competency-based education across the medical education continuum and into practice. The overarching goal of the Task Force is to seek opportunities to accelerate change in medical education curriculum, pedagogy and competency-based learning. This preliminary report summarizes information from a review of the literature regarding the current state of competency-based medical education (CBME) in the health professions.

INTRODUCTION

After a comprehensive systematic review of the medical education definitions related to CBME, Frank et al. proposed the following definition of competency-based education based on recurring concepts in the literature over several decades:

Competency-based education is an approach to preparing physicians for practice that is fundamentally oriented to graduate outcome abilities and organized around competencies derived from an analysis of societal and patient needs. It deemphasizes time-based training and promises greater accountability, flexibility, and learner-centredness.1

The term “competency” refers to the individual physician, while the term “accreditation” refers to the system to ensure that educational programs at each phase of the continuum teach the competencies at an appropriate level and in an appropriate sequence. CBME is growing across the health professions for a variety of reasons. The government and other payers are increasingly demanding that the profession demonstrate accountability for the competency of those they educate, license, certify and/or credential. To ensure that this need for accountability is met, demonstration and re-demonstration of professional competence have been demanded. This demand is a moving force behind Maintenance of Certification (MOC) and the principles of Maintenance of Licensure (MOL).

In 1999, the Accreditation Council for Graduate Medical Education (ACGME) and American Board of Medical Specialties (ABMS) adopted a set of competencies intended to assess resident and physician performance in six areas: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice.2 This project was originally developed for graduate medical education (GME); each competency is made up of milestones for which residents are required to demonstrate proficiency as they progress through training. These same competency domains are now being used to evaluate...
medical students and attending physicians. (The ABMS and ACGME subsequently modified the
patient care competency domain; it is now called patient care and procedural skills.)

Competencies in GME have been further broken down to subcompetencies or requisite knowledge,
skills and attitudes representing the domains of the broader competencies. To further explicate
learning objectives and expectations for learner performance along a developmental continuum,
essential behavioral attributes, or milestones, within each competency domain are being further
defined and are expected to be demonstrated at key points during the resident’s education. For
selected specialties, the concept of Entrustable Professional Activities (EPAs) has been developed
in light of the difficulties in reliably measuring competencies. EPAs are work tasks that are
independently executable, observable and measurable in their process and outcome. Faculty use
EPAs to make decisions about the level of supervision required for individual trainees. As trainees
attain various milestones, their attending supervisors can entrust them to function with more
autonomy.

CBME focuses on the skills and progression of learning of an individual, promoting greater
learner-centeredness and potentially allowing greater flexibility in the time required for training.
Reducing the emphasis on time-based curricula design may allow physicians to acquire and
demonstrate competency in new specialty areas.

This learner-centered approach could then replace or de-emphasize time-based curriculum
frameworks. Time in a given level of education or training would no longer be the most important
criterion for board eligibility or even medical school admission criteria or graduation. “Expertise is
the ultimate goal of CBME and requires reflective practice.”

SUMMARY OF THE LITERATURE

Historically, the accreditation process for undergraduate medical education (UME) and GME
favored a time-based system, with less focus on trainee competency and achievement of milestones
during or at the completion of training. Implementation of competency-based education by the
ACGME has subsequently led to a drive for competency-based learning in UME, but a lack of
standardization in UME has slowed this transition. The 2011 release from the Liaison Committee
on Medical Education (LCME) of the “Functions and Structure of a Medical School: Standards for
Accreditation of Medical Education Programs Leading to the MD Degree” states that medical
schools must provide the means for assessing student development of core competencies that are
expected by the public and the profession.

To provide a single, relevant infrastructure for curricular resources in the Association of American
Medical Colleges’ (AAMC) MedEdPORTAL and Curriculum Inventory and Reports (CIR) sites,
the AAMC undertook a project to compile and compare a representative sample of competency
frameworks from medicine (i.e., the continuum of physician of education, physician specialties,
subspecialties, and other countries) to those of other health professions. This initiative represents a
first step toward establishing a common taxonomy of competencies. The Physician Competency
Reference Set (PCRS) will serve as an aggregation tool that allows the AAMC to collect and
analyze data through the Curriculum Inventory about competency-based education and the use of
expectations (competencies, objectives, milestones, EPAs, etc.) in medical education
(aamc.org/initiatives/cir/about/348808/aboutpcrs.html). Possible reporting includes information on
what competencies schools are incorporating into their curricula; where in their curricula schools
are incorporating expectations and competencies; how schools are teaching and assessing
competencies; and in what context and/or content competencies are being taught.
The University of California, San Francisco (UCSF) medical school has fully embraced competencies in its UME training programs, and curricula are being developed around them to ensure that trainees are prepared for residency. Other competency systems that have been formulated include those developed by the Canadian Medical Education Directions for Specialists (CanMEDS) 2005 and the Institute for International Medical Education. As competency-based training is an evolving field, some authors have provided criteria for specifically evaluating a given competency domain. These include focusing on end performance, creating goals that immediately reflect instruction, identifying measurable behaviors, setting goals that are achievable by all learners, and keeping learners informed of what is expected.

There are several proposed models for competency-based assessment, and the 11 medical schools that were recently funded by the AMA’s Accelerating Change in Medical Education initiative will integrate competency-based assessment into their respective curricula over the next five years. Several Canadian and US medical schools have begun offering three-year fast-track programs, some of which are focused specifically on primary care, while others assure a position in a specialty in the institution’s GME training programs for fast-track students. Many of these programs, including New York University School of Medicine (NYUSOM), which is a recipient of the AMA funding initiative, are using competency-based assessment in UME and GME to prepare physicians in a shorter period of time. The NYUSOM will use an electronic portfolio and a virtual patient panel in order to teach and track skills within competency domains for students in the three-year program. Another example of a portfolio-based tracking system has been implemented at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University (CWRU). This program was first implemented in 2004 as a result of a joint venture between the Lerner College of Medicine and CWRU to train future physician-scientists in a five-year track. It is clear from these and other models that technology, electronic portfolios, virtual and simulated patient cases, and digital dashboards have become critical tools in assessing competency.

In addition, service-based learning and longitudinal clinical experiences are tools being used at medical schools to help students achieve competency in caring for unique populations and in the long-term management of chronic ailments. Many medical schools have implemented single or multi-year continuity clinics in order to give students the ability to participate in patient care over time. This reinforces didactic and clinical knowledge early and fills a needed niche as inpatient stays shorten, thereby limiting a learner’s ability to experience the complete management of more complex diseases. It also instills a sense of personal responsibility to a patient population and allows trainees to improve multiple competencies while working with a familiar group of clinic patients. Continuity clinics have long been an aspect of many GME programs, but are a relatively new and evolving concept for UME.

**SUMMARY OF CURRENTLY AVAILABLE VALID AND RELIABLE ASSESSMENTS OF COMPETENCIES**

Early in the implementation of CBME, Carraccio and colleagues summarized the steps to achieving CBME. Two of the four steps identified involved assessment. First was the need to delineate the performance level expected for a particular competence. The next step is to identify how the attainment of that competence will be assessed. These assessment tools should be matched to the competency being evaluated to be most effective.

Developing assessment tools that are valid and reliable has been felt to be a significant challenge to the implementation of CBME. The component of health professions education that has been most frequently and reliably assessed is that of knowledge acquisition as applied in various high stakes exams for licensure, certification and recertification. Assessments for the full spectrum of...
competence required for CBME must evaluate the integration of the various domains of the health profession, including knowledge to provide safe and effective care to patients. This generally requires multiple assessments of the learner, utilizing direct observations in the context of a range of simulated or real clinical activities. The latter requires that faculty consistently interpret their observations and evaluations of learners. Thus it requires significant faculty development to achieve reliable and valid ratings of learners.6,17,18

The competencies required for providing patient care are necessarily complex. Reliability of assessments of these competencies can be improved by increased frequency of assessment. Assessments need to be built into the daily work done by the learners and teachers in the care of patients.6 Some specialties initially implementing the ACGME milestones have moved to define EPAs to provide a more all-inclusive and patient care-focused perspective on these complex competencies.

CBME requires assessment of learners along the training continuum toward the competence required to practice at the next level of training or to enter into unsupervised practice if at the end of formal training. Several tools for assessing areas of competence other than knowledge acquisition have been validated and found acceptable. Examples of these are Objective Structured Clinical Examinations (OSCE), Objective Structured Assessment of Technical Skills (OSATS), Mini-Clinical Evaluation Exercise (CEX), simulation-based scenarios, and multi-source evaluations.19 Performance on patient care processes and outcomes can be assessed for practicing physicians or advanced trainees practicing in certain venues somewhat independently.

Some perceive that assessment of competencies cannot be done unless the perfect evaluation instruments are available, which is not currently the case. Most would agree, however, that great progress can be made with current assessment tools, while always working to refine and improve them.

CONSIDERATIONS ACROSS THE CONTINUUM OF EDUCATION AND PRACTICE

In 2000, the ABMS and its 24 Member Boards adopted the MOC programs, which incorporated the six core competencies into a system of documentation of life-long learning and maintenance of clinical competence throughout physicians’ careers by the diplomates of the ABMS Member Boards. The changes in each of these component areas have evolved over the years since 1999 so that the graduates of residency training and fellowship programs expect that evaluation in all of these domains will continue throughout their professional careers. For graduates of earlier eras, the establishment and maintenance of professional competence is a complex endeavor.20

The ABMS organized MOC activities into the following four domains:
1. Licensure and Professional Standing
2. Lifelong Learning and Self-Assessment
3. Cognitive Expertise
4. Practice Performance Assessment

Early in the process, maintenance of a valid, unrestricted state license, often requiring providing documentation of continuing professional education activities, and taking a high-stakes exam at intervals, were the main requirements. Additional emphasis on identifying and addressing gaps in one’s own medical knowledge or practice performance is now also required.

Board-certified physicians have had to pass high-stakes exams in addition to successfully completing GME training during the initial certification process. As a physician’s career evolves,
however, he/she may no longer practice within the full spectrum of the specialty in which he/she holds primary board certification. This is particularly true if the physician does fellowship training in a particular area. The subspecialty board generally also has requirements for maintaining certification. Some of these requirements may overlap sufficiently such that satisfying self-assessment and practice performance assessment activities may suffice for both. However, taking an exam on content that one does not use often or at all in one’s practice, and for which the physician would use easily available electronic resources to update his/her knowledge base if such content were needed in patient care, is understandably daunting for many physicians. The ABMS Member Boards have begun to enhance their programs to be more authentic and relevant to practice. The AMA and the ABMS are also considering the need for mandatory, ongoing, and secure high-stakes examinations and exploring alternative ways to assess knowledge in a way that better integrates with other MOC elements and reflects the application of knowledge in patient care or other professional activities.

The requirements of MOC do not exist in a vacuum. Although specialty board certification remains a voluntary professional self-regulatory program independent of state medical licensure, the number of hospitals and other health care organizations that make board certification a key qualification, e.g., the Joint Commission and Centers for Medicare and Medicaid Services (CMS), continues to expand. Physicians are frequently asked to report quality data from their practices to payers, participate in group quality projects in their practices and/or hospitals, and undergo ongoing surveys of their professional competence and communication skills from their patients, peers and coworkers conducted by payers, hospitals and other aspects of the health care system.

Some of the data that these processes collect are reasonably valid and useful to physicians and might, with the physician’s permission, be forwarded to his/her specialty board as demonstration of the physician’s participation in ongoing assessment of his/her practice environment and commitment to improvement. Then only those diplomates who either do not have the opportunity or who chose not to participate in these group activities would need to perform individual projects. As most practice improvement activities involve many team members other than a particular physician, reporting ongoing activities in a practice or hospital would more accurately reflect systems-based practice improvement.

The AMA has adopted Principles for MOC that stress the importance of focusing on the competencies that physicians are utilizing to provide care to their patients. The AMA is engaged in ongoing discussions with the ABMS and its Member Boards to encourage continued efforts to improve the validity and reliability of procedures for the evaluation of candidates for certification. Council on Medical Education Report 6-A-14, being considered by the House of Delegates at this meeting, provides more information about MOC and includes a summary of current AMA policies and recommendations regarding MOC.

AMA POLICY

Policy H-275.936, “Mechanisms to Measure Physician Competency,” asks our AMA to review and propose improvements for assuring continued physician competence, including but not limited to performance indicators, board certification and recertification, professional experience, continuing medical education, and teaching experience.

SUMMARY AND RECOMMENDATIONS

As the health professions continue to build curriculum and assessment around the development of competencies, it has become increasingly important to break down the silos across the continuum
of medical education and create consistency whenever possible from the premedical interval through lifelong learning in the knowledge and skills necessary for a contemporary physician. Further study is needed to identify the relationship of curriculum, pedagogy and assessment, particularly high stakes or gateway assessments, in the setting of learning styles, as well as the timeline and metrics for development of a lifelong continuum of defined competencies.

The Council on Medical Education recommends that the following recommendations be adopted and that the remainder of the report be filed.

1. That our American Medical Association Council on Medical Education continue to study and identify challenges and opportunities and critical stakeholders in achieving a competency-based curriculum across the medical education continuum and other health professions that provides significant value to those participating in these curricula and their patients. (Directive to Take Action)

2. That our AMA Council on Medical Education work to establish a framework of consistent vocabulary and definitions across the continuum of health sciences education that will facilitate competency-based curriculum, andragogy and assessment implementation. (Directive to Take Action)

Fiscal Note: Less than $1,000.

REFERENCES


9 MD Competencies. University of California, San Francisco. Available at: meded.ucsf.edu/ume/md-competencies (accessed 2-5-2014)


