The ACGME Core Competencies: Changing the Way We Educate and Evaluate Residents

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The ACGME Outcomes Project

While duty hour restrictions have garnered the most attention in discussions of graduate medical education, there is an elemental shift occurring in resident and fellow education that goes hand in hand with restrictions on duty hours and tightening of supervision requirements. Resident training is morphing from apprentice-style on-the-job training into a more formal educational process, along with all the pros and cons that transition entails. The **Accreditation Council for Graduate Medical Education** (ACGME) has defined six core competencies that all physicians need to practice in a changing health care environment, and all accredited training programs are now based upon these competencies.[1] Despite the fact that teaching and evaluation of these competencies is required, many physicians and medical students are still not familiar with these competencies.[2, 3] This article describes the rationale behind the changes, the educational concepts that now form the framework for residency and fellowship training, and the challenges and opportunities of training physicians within this framework.

The ACGME, before instituting the first duty hour restrictions in 2003, approved a long term initiative called the "Outcomes Project" in 1999.[1] The purpose of this initiative has been to increase the emphasis on educational outcomes in residency education. In other words, in the "old days" of the 20th century, the ACGME accredited residency programs based upon their potential to train residents. The type and volume of cases, facilities and credentials of the staff were evaluated but resident achievement was not actually measured. It was more or less assumed that if you had good patient material and good teachers, then resident training should be adequate and the result would be a competent physician. This apprentice model allowed the training program a great deal of autonomy and worked for a very long time. So what was the impetus for change? Probably the same thing that has led to duty hour restrictions: the need for public accountability. Because our system of graduate medical education relies heavily on public funding, the ACGME strives to assure the public that the accreditation process includes safeguards to protect the public from tired, poorly supervised and, most important, poorly trained residents.

The Core Competencies

Since the turn of the century, the ACGME has shifted its focus from assessing program potential to assessing whether residents actually achieve desired learning objectives. This shift has been a slow, ongoing process that continues to evolve as educational goals are defined and evaluation methods are introduced. The first part of this project was identification of learning objectives on the basis of 6 core competencies physicians need to practice in a changing health care environment. These core competencies are:

- Medical Knowledge
- Patient Care
- Practice-based Learning and Improvement
- Professionalism
- Interpersonal and Communication skills
- Systems-based Practice

The second phase of the project, completed in 2006, requires programs to develop tools to assess these competencies. In the current phase, which extends until 2011, programs must use the data from competency-based outcome measures to improve the training program. Each specialty has its own **residency review committee** (**RRC**) within the ACGME that is responsible for creating the requirements specific to that specialty, and each RRC has been charged with determining which outcome measures must be used to measure each core competency for that specialty. In other words, the RRC for radiology is currently determining what bench marks a radiology resident must achieve in order to be considered "competent" in each core competency. A specific example might be that a resident will be considered competent in medical knowledge if he or she scores above a certain percentile on the in-service exam and may be considered competent in interpersonal and communication skills if he or she is ranked as competent in these skills on a 360 degree evaluation by multiple evaluators. Once these milestones have been determined, each program will need to submit periodic reports to the ACGME detailing the percentage of residents that have achieved competence in these areas. Programs must then use these outcome measures to improve the educational program.

There has been criticism that the ACGME competencies are contrived, force residents into too much of a student rather than physician role, and take time away from the actual practice of physician training.[4] In addition, there is no evidence that current measurement tools exist to measure the competencies individually.[5] However, the Outcomes Project is clearly here to stay and requires those involved with resident and fellow education to accept these standards as necessary parts of training.[6] With that in mind, what follows is a brief discussion of some of the competencies that are the most problematic either because they are difficult to understand or because they are difficult to measure.

Despite being in existence for over ten years, the concepts of "practice-based learning and improvement" and "systems-based practice" are particularly poorly understood. This makes it challenging to devise and implement teaching and evaluation methods for these competencies. In addition, there is some overlap between these two competencies which increases the confusion, although the overlap may simplify the education and evaluation of these competencies once they are understood.

Practice-based Learning and Improvement

Practice-based learning and improvement (PBLI) aims to teach trainees how to become lifelong learners in the rapidly changing world of clinical medicine. The requirement common to all accredited residency and fellowship programs is that "residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. Residents are expected to develop skills and habits to be able to meet the following goals:

- Identify strengths, deficiencies, and limits in one's knowledge and expertise
- Set learning and improvement goals
- Identify and perform appropriate learning activities
- Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement
- Incorporate formative evaluation feedback into daily practice
- Locate, appraise and assimilate evidence from scientific studies related to their patients' health problems
- Use information technology to optimize learning
- Participate in the education of patients, families, students, residents and other health professionals"[7]

The model of practice-based learning is not a new one, and is utilized at the medical school level as well. Essentially, the model is one in which a physician is faced with a question or problem in the course of daily practice, to which he/she does not know the answer. The physician should identify this lack of knowledge, search the scientific literature for an answer, and use that knowledge to improve patient care. (Figure 1) Teaching of practice-based learning should thus include education about searching the medical literature as well as critically evaluating studies for scientific merit and applicability to the particular question raised in the course of clinical practice. Some academic centers have forged a productive alliance between health sciences librarians and **graduate medical education (GME)**, creating effective online teaching modules that focus not only on the nuts and bolts of performing a search of the medical literature, but also on how to critically evaluate the studies and practice Evidence Based Medicine.[8] Other academic centers have incorporated PBLI learning by analyzing complex clinical decision making in clinical scenarios taken from the resident's first hand experience.[9] This resident-centered, "ground-up" approach has led to the requirement that residents develop individual learning plans to demonstrate that they recognize and can find the resources to address their specific weaknesses.

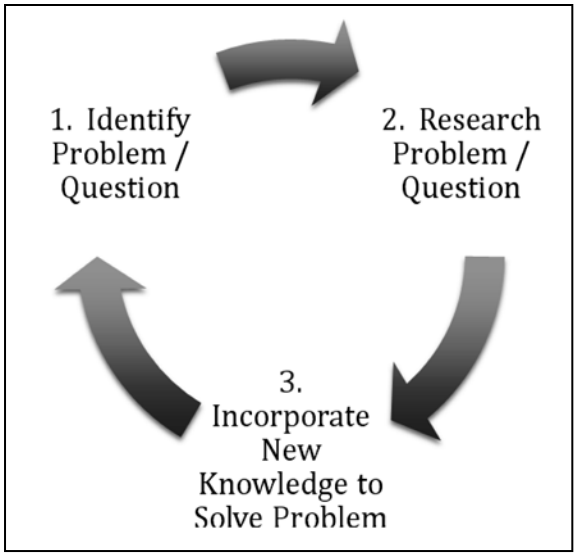

Figure 1.

Another important part of PBLI is learning how to systematically use quality improvement methods to implement changes that improve practice. This means that residents must have meaningful involvement in their departments' **quality initiatives (QI)**. In addition to attending morbidity and mortality conferences, residents must be active participants in those quality improvement initiatives that can be measured to demonstrate practice improvement. Few methods to evaluate the success of initiatives to teach practice-based learning have been reported but range from pre- and post-intervention surveys of the residents to use of an **Objective Structured Clinical Examination (OSCE)**.[10-11]

There is some overlap between the PBLI and SBP competencies, as both involve improving practice within the health care system. Often, centers report curricula and evaluation methods that address overlapping portions of PBLI and SBP together.[10-11]

Systems-based Practice

The **systems-based practice (SBP)** core competency encompasses the non-medical aspects of medical care and focuses on the residents' ability to work competently within the healthcare system. The ACGME requires that "Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

- Work effectively in various health care delivery settings and systems relevant to their clinical specialty
- Coordinate patient care within the health care system relevant to their clinical specialty
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate
- Advocate for quality patient care and optimal patient care systems
- Work in interprofessional teams to enhance patient safety and improve patient care quality
- Participate in identifying system errors and implementing potential system solutions"[7]

These skills were not formally taught in the traditional apprentice style model of residency education, and many SBP skills were typically learned "on the job" upon finishing residency. Examples include learning about participation with health insurance plans, healthcare delivery in a variety of venues (in-hospital vs. in-office, private practice vs. academic setting), coordinating patient care across a multi-specialty healthcare system, and considering cost to patients and the healthcare system in the decision-making process. For radiologists, for example, cost-effective practice means that it is important to know which imaging test is most likely to effectively answer the clinical question posed by a referring physician. Proper selection of an imaging test will often preclude the need for additional studies and result in overall savings to the patient and healthcare system. Therefore, for radiology residents, knowledge and utilization of the American College of Radiology Appropriateness Criteria for cost-effective imaging utilization can be one outcome measure used to demonstrate competence in SBP.[12] The precise SBP practice goals and objectives for residents will vary by specialty, but an understanding of the health care delivery system and the ability to work in teams to improve patient care quality is common to all. Medical simulation has been shown to be a useful tool in teaching teamwork, as well as for evaluation of multiple competencies.[13, 14]

In summary, resident education remains a dynamic and challenging process, with increasing regulations and requirements for both administrators and trainees. It is, however, a critically important endeavor to which we must remain committed. Knowledge of the underlying reasons for the requirements and an understanding of best practices in residency education to meet those requirements can further the goal of producing physicians who are competent in all facets of practice within our increasingly complex health care delivery system.

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Disclosure of Financial Interest

The authors and/or their spouses/significant others have no financial interests to disclose.

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