

## ACGME Outcome Project: Phase 3 in Emergency Medicine Education

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### Abstract

In this article we present a summary of two interactive panel discussions held at the 2008 Council of Emergency Medicine Residency Directors (CORD) annual meeting. Attendees attempted to identify measurable outcomes for resident performance that could be used to evaluate program effectiveness.

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### BACKGROUND

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**A**t the 2008 Council of Emergency Medicine Residency Directors (CORD) annual meeting, two interactive panel discussions were held at which attendees attempted to identify measurable outcomes for resident performance that could be used to evaluate program effectiveness. This article reports on those discussions.

The Accreditation Council for Graduate Medical Education (ACGME) embarked on an ambitious project in 1998 to redesign the process by which they accredit U.S. training programs.<sup>1</sup> The process moved from assessing a program's resources, policies, and procedures (process of education) to assessing the product or outcome of that process. The ACGME began this project with the identification of the six general competencies common to all specialties (Table 1). In Phase 1 (2001–2002), residency programs focused on teaching residents and faculty about the six competencies. Each program was then asked to integrate the competencies into their didactic and clinical curriculum. Phase 2 (2002–2006) required that each training program provide specific learning objectives for each of the six competencies. In addition, each program established an evaluation process to obtain actual "aggregate" learner performance data in all six competencies. Phase 3 (2006–2011) requires a demonstration that learning objectives are achieved by using external measurements; previously attestations of competency from

program directors and faculty were used. These measurements must be used in an ongoing continuous quality improvement process for a given program's curriculum. Examples of external measurements include assessment of individual patient care process, patient questionnaires, compliance with quality performance indicators, employer evaluations of graduates, and standardized testing.<sup>2</sup> Both individual resident performance data and aggregate program data will be used in making future accreditation decisions. Individual specialties will develop "milestones" of competency development, as well as specialty-specific "learning portfolios" used by residency review committees (RRCs) as uniform measures of individual resident competency.<sup>3</sup> Finally, Phase 4 will identify benchmark programs and best practices and then utilize these as models of excellence that individual programs might adopt.

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### BARRIERS TO THE ACGME OUTCOME PROJECT IN EMERGENCY MEDICINE

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The goals of the Outcome Project are certainly laudable, but adapting them to the training programs of emergency medicine (EM) is not straightforward. Several obvious barriers arise. First, it may be difficult to isolate the contribution of the care rendered by the emergency physician (EP) to the ultimate patient outcome. Patients often arrive in the emergency department (ED) after treatment from the primary care physician or from the out-of-hospital system. Many patients come with specific directives and expectations from their private physicians. For example, assessing the effective use of magnetic resonance imaging for back pain would have to take into consideration the number of studies requested by a referring physician or consultant. Further, patients receive subsequent care under the direction of another health care team (inpatient or outpatient), confounding the contribution of the treating

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**Table 1**  
The Six General Competencies

Patient care (PC)
Medical knowledge (MK)
Practice-based learning and improvement (PBL)
Interpersonal and communication skills (IC)
Professionalism (Prof)
Systems-based practice (SBP)

EP. Patients in the ED often have overriding social and economic considerations, many of which lead them to seek care in the ED in the first place. These provide additional barriers to measuring an individual physician's outcomes. The socioeconomic situation of the ED often mitigates care decisions as well. Affluent EDs may have technologies, care provider ratios, and resources lacking in some public hospitals. Crowding and boarding clearly influence the ability to provide quality care.<sup>4-9</sup> Diagnostic testing that is usually deferred to follow-up under a primary care physician may instead be undertaken in an ED caring for patients lacking timely follow-up options. Finally, discerning resident performance from faculty performance can be impossible in a setting with such close resident supervision 24/7. It is difficult to differentiate care decisions initiated by the resident from those of the supervising faculty and likewise to identify "near-misses" caught during the staffing process. Because many components of the ED care process are beyond the control of an individual resident, outliers of performance indicators (e.g., delays in obtaining an electrocardiogram) may reflect inadequate staffing/nursing resources rather than provider error.

Some EM educators believe that it is not necessary to measure outcomes. They would argue that our residency programs consistently match some of the brightest and best medical students and that we consistently produce a "quality product." Yet there are some data suggesting that improvements are necessary. The Joint Commission has reported that 50% of sentinel events occur in the ED. It also reports that 70% of those errors are preventable.<sup>10</sup> A Canadian study reported on chest tube complication rates among residents of varying specialties.<sup>11</sup> Chest tubes placed during the intensive care unit rotation by EM residents had a complication rate of 40%, compared to rates of 7% among general surgery residents, 25% among other surgical residents, and 12.5% among family medicine and internal medicine residents. Further, there was no difference in complication rates between EM residents trained in the 5-year Canadian program or the 1-year training program.

The Outcome Project seeks to measure the quality of patient care rendered by individual residents. However, the definition of "quality" often differs. Quality is perceived by the payer to be cost efficiency, by the physician as correct diagnosis and treatment, and by the patient as customer service. The pay-for-performance program attempts to develop specific measurable evidence-based outcomes as determinants of quality. Such outcomes may be obvious (e.g., aspirin for acute myocardial infarction) or problematic (antibiotics within

4 hours for community-acquired pneumonia). The goal of reaching the threshold for the quality measurement may lead to unintended adverse consequences, such as increased use of antibiotics in patients without pneumonia.<sup>12</sup> Establishing meaningful outcomes for EM will be problematic, although there are a few publications that attempt to define initial quality measurements at an institutional level.<sup>13,14</sup>

## INITIAL PROPOSED OUTCOME MEASURES

Measurement of medical knowledge appears most straightforward. Resident progress can be monitored through periodic examinations, including the American Board of Emergency Medicine (ABEM) in-training examination, while performance on the ABEM qualifying and oral examinations could serve as the "reference standard" for graduates of a given program.

In the CORD discussion it was clear that outcome measurement for the remaining competencies could follow either a "minimalist" or "opportunist" direction. The "minimalist" course holds that our "product" is of very high quality (our residents are successful following graduation). Existing databases and measures could serve as our outcomes measurement, because these are largely a response to outside agencies, and the current quality of EM education is not the specific target. Further, more complicated outcome measurements lack validation and/or are cost-prohibitive. Outcome measurements useful in the minimalist direction are continued ABEM recertification and participation in lifelong learning self-assessment (practice-based learning and medical knowledge), licensure and medical staff credentialing, and practice performance measures such as relative value units (RVUs; system-based practice), patient satisfaction scores (interpersonal communication), and quality performance indicators (patient care). Many of these are already measured by EDs and practice groups, and their use as outcome measures on individual graduates would result in less administrative burden.

The "opportunist" view suggests that such measurements fall short in realizing the goal of actually measuring the educational effectiveness of our training programs. Proponents suggested disease-specific indicators looking at diagnostic accuracy, utilization of tests, and selection of therapy. The goal would be to define "optimal" characteristics that are subsequently translated into specific performance measurements. Of course, establishing "optimal" characteristics would likely be problematic based on the difficulty in establishing scientifically validated and accepted care guidelines.

There are several existing tools that can measure competency, and most can measure more than one of the general competencies. In addition to the ABEM in-training examination mentioned above, training assessment tools include resident evaluation by peers and faculty, direct observation with or without checklists, and simulation. While simulation has the potential to assess progress, validated parameters for each level of training are lacking. Standardized cases would help to assess not only an individual resident's progress but

also program effectiveness. Simulation remains unvalidated for "high-stakes" educational decisions for EM residency training. There is a Hawthorne effect in place when the resident knows that he or she is being evaluated, making translation of simulation lab performance to actual patient care uncertain.

Evaluation of the graduate (the true outcome) requires a different set of tools. Table 2 lists some useful tools to measure outcome. Additional measurable metrics may be developed as the electronic medical record becomes universal. Some of these that may be useful in the future are listed in Table 3.

### **FEASIBILITY OF OUTCOMES MEASUREMENTS**

While the "opportunist" approach to the Outcome Project for EM affords many appealing initiatives, creating a complex system that closely measures quality, especially for specific diseases, exceeds the current EM educational community's resources and expertise. A comprehensive system requires a large investment of time and money and commitment and accountability from nonstakeholders such as employers and consultants. There is little incentive for this latter group to comply with data collection, and there may be legal obstacles as well. Further, it is clear that the practice environment can greatly influence measurements of quality. Access to consultants, nursing ratios, computer resources, and ancillary staff all influence patient outcome. Measurements of throughput, RVUs, and even patient satisfaction may be more heavily influenced by

the practice environment than the performance of a graduated resident.

Other unaddressed issues include sampling frequency and even who to sample (colleagues, nurses, consultants, patients, families). Obtaining meaningful patient outcomes and satisfaction remains problematic for patients discharged from most EDs. Validation of the measurements must be established. It is unclear who will pay for the extensive data collection and reporting. Defining the attributes of a "quality emergency physician" requires measuring the "right outcomes," yet questions remain about who should define these and monitor them over time.

### **CONCLUSIONS OF THE 2008 CORD MEETING WORKGROUP**

The group decided that some combination of minimalist and opportunist measurements would be most useful. For comparing program effectiveness, common outcome measures should be selected and measured in all programs. Initially, existing measures should be chosen. Even this may create unintended consequences, such as dissuading programs from "gambling" on accepting applicants with lower USMLE scores (as recommended to improve the diversity of our provider pool).<sup>15</sup> Individual programs could create more comprehensive "opportunist" measurements to track the progress of their residents or to evaluate their graduates. From this experience, feasible and validated measurements can be integrated into a national evaluation system. An exam-

**Table 2**  
Initial Toolbox to Evaluate Outcomes of EM Training by Competency

	PC	Prof	SBP	PBL	IC
Employer surveys	X	X	X	X	
Patient satisfaction	X	X			X
RVUs	X		X	X	
Throughput times	X		X	X	
CMS quality measures	X	X		X	
360 evaluations		X			X

IC = interpersonal and communication skills; PBL = practice-based learning and improvement; PC = patient care; Prof = professionalism; RVU = relative value units; SBP = systems-based practice.

**Table 3**  
Additional Toolbox Items Available With Electronic Medical Records

	PC	Prof	SBP	PBL	IC
Patients per hour			X	X	
Use of tests	X		X	X	
Use of consultants	X		X	X	
Diagnosis specific treatment	X			X	
Length of stay	X		X	X	
Decision to admit time			X	X	
Complication rate (e.g., for procedural sedation)	X			X	
Patients returning to ED	X	X			X

IC = interpersonal and communication skills; PBL = practice-based learning and improvement; PC = patient care; Prof = professionalism; SBP = systems-based practice.

ple given for the medical knowledge competency was national reporting of ABEM certification on first attempt to the RRC, while locally an individual program would measure in-training exam score improvement or the number of graduates who feel the need to take an external board review course.

In a recent article Dr. Thomas Nasca,<sup>3</sup> the new executive director of the ACGME, described the Outcome Project.

"It was hoped the [graduate education] community, through decentralized research efforts, would define the tools required to systematically evaluate the Competencies in each discipline, and the ACGME, through its RRCs, would then 'harvest' this research to create standards and core methods for evaluating the Competencies in each specialty. In that fashion, each specialty would create the 'outcomes' in the competencies desired and the metrics by which the Review Committee in each specialty would evaluate the effectiveness of each program in assisting their residents in achieving desired educational outcomes."<sup>3</sup>

The EM educational community and CORD must play an integral role in the establishment of the standards that will be used to assess outcomes. This meeting established an initial toolbox of potential measurements. The next step is for CORD to narrow this toolbox into a specific set of measurements to be gathered and reported by all programs. The RRC for EM will then use these measurements to assess program performance and determine accreditation. The measurements must be validated through appropriate educational and outcomes research efforts. Further, there must be an ongoing mechanism to develop more effective measurements.

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