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Toward a shared language for competency-based medical education

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ABSTRACT
The paradigm shift brought about by the advent of competency-based medical education (CBME) can be characterized as an adaptive change. Currently, its development and implementation suffer from the lack of a lingua franca. A shared language is needed to support collaboration and dissemination across the world community of medical educators. The International CBME Collaborators held a second summit in 2013 to explore this and other contemporary CBME issues. We present the resulting International CBME Collaborator’s glossary of CBME terms. Particular attention is given to the terms competency, entrustable professional activity (EPA), and milestone and their interrelationships. Medical education scholars and enthusiasts of the competency-based approach are encouraged to adopt these terms and definitions, although no doubt the vocabulary of CBME will continue to evolve.

Introduction

Shared language is important in leading adaptive change. When people begin to use the same words with the same meaning, they communicate more effectively, minimize misunderstandings, and gain the sense of being on the same page, even while grappling with significant differences on the issues (Heifetz et al. 2009, p. 9).

The paradigm shift in medical education from an approach focused on structure and process to one focused on competencies is well under way (Carraccio & Englander 2013). Getting from where we are currently – essentially, still in the world espoused by Flexner over 100 years ago (Flexner 1910) – to where we want to be in a competency-based model has all the hallmarks of an adaptive challenge. This type of challenge is distinct from a technical challenge in the following ways: (1) the path is not clear; (2) the destination requires a change of identity for education and training programs; (3) the journey requires new competencies and experimentation for educators, clinical faculty, and trainees alike; (4) the process generates disequilibrium and often a sense of loss; and (5) the process takes longer to resolve than technical work (Heifetz et al. 2009). This kind of fundamental change is greatly facilitated by a shared language of related terms.

Ambiguity around the language of CBME has been highlighted as an important barrier to the adoption of the new paradigm (Fernandez et al. 2012; Parent et al. 2013; Whitehead et al. 2013; Hautz et al. 2015). Frank et al. (2010) moved the field closer to a shared language with a seminal paper that stemmed from the first summit of the International Competency-based Medical Education (CBME) Collaborators. However, since that paper’s publication, new terms have arisen in the field that not only suffer from a lack of clear and common definitions but also create confusion between old and new terms. At the second summit of the International CBME Collaborators in 2013, participants sought to build on Frank et al.’s (2010) previous work, and on other papers that appeared in the literature since that publication, by working toward a shared understanding of the emerging concepts of milestones and entrustable professional activities (EPAs) (ten Cate 2013; Orgill & Simpson 2014). This paper presents the work of the Collaborators in developing common definitions and attempts to identify the relationships between EPAs, competencies, and milestones. It is hoped that this will be of help to medical educators as they move toward the shared language so necessary for this adaptive change in medical education.

Defining milestones
The concept of milestones has gained significant attention in medical education, initially as a result of the Milestones
Defining EPAs

In 2005, ten Cate (2005) first introduced the concept of EPAs as a practical framework for implementing a competency-based system of education. Subsequently, ten Cate and Scheele (2007) further described the concept using the specialty of obstetrics and gynecology as an example. Since that time, a number of authors have described the implementation of the concept, usually with one or two EPAs, and often with varying definitions or interpretations of the definition (Mulder et al. 2010; Hauer et al. 2013). Critical to the definition of EPAs are the following features, as outlined in the seminal papers of ten Cate and Scheele (ten Cate 2005; ten Cate & Scheele 2007). An EPA:

- is part of essential professional work in a given context
- requires adequate knowledge, skills, and attitudes
- leads to recognized output of professional labor

In addition, ten Cate and Scheele delineated features of EPAs that are ideal but not required. These include that EPAs should:

- be confined to qualified personnel
- be independently executable
- be executable within a time frame
- be observable and measurable in its process and outcome (done well or not done well)
- reflect one or more competencies (see “The relationship between EPAs, competencies and milestones,” below)

On the basis of this work and the literature that has developed since, the International CBME Collaborators developed the following consensus definition in the context of medical training:

**Entrustable professional activity (EPA):** An essential task of a discipline (profession, specialty, or subspecialty) that an individual can be trusted to perform without direct supervision in a given health care context, once sufficient competence has been demonstrated.

For an individual who has completed training and is entering practice, EPAs are tasks that he or she is trusted by society and the profession to perform without supervision.

It follows, then, that a discipline, specialty, or health care profession would have a set of EPAs that reflects the relevant scope of practice. To this end, comprehensive lists have been implemented to date for physician assistants in the Netherlands (Mulder et al. 2010), obstetricians and gynecologists in the Netherlands (ten Cate & Scheele 2007), and psychiatrists in Australia and New Zealand (RANZCP 2013).

Two additional terms are emerging in the literature as a result of the EPA concept: “nested EPA” and “statement of awarded responsibility (STAR).” The concept of a nested EPA is relatively new and underdeveloped in the literature. The following working definition emerged from the post-summit work of the ICBME Collaborators:

**Nested EPA:** A task that requires proficiency in a subset of the knowledge, skills, and attitudes required for the broader EPA. The expectation for entrustment with the performance of a nested task occurs at an earlier stage of the developmental trajectory than entrustment with the entire task. A nested EPA possesses the elements of its “parent” EPA; that is, it requires the integration of knowledge, skills, and attitudes; it is independently executable within a given time frame by qualified personnel; and it leads to observable and measurable outputs. An example of a nested EPA might be “understanding the indications for and performing a caesarian section,” which is a nested in the “parent” EPA “managing complicated childbirth”. (van Loon et al. 2014).

The related concept of a statement of awarded responsibility (STAR) was first introduced by ten Cate and Scheele (2007). Their original conceptualization has been modified in light of the work of Epstein and Hundert (2002) to give the following definition:

**Statement of awarded responsibility (STAR):** A formal recognition of the specific point at which entrustment for an EPA is granted. STARs require supervisors to make deliberate decisions over time about their trainees’ competence to perform all critical activities for that EPA. The specific and formal implications of a STAR differ from those of any evaluations that have been the backbone of trainee performance documentation to date, in that a STAR allows the learner to perform the corresponding EPA without supervision. As a result, it bears a closer resemblance to a certification than an assessment or evaluation.

**Other emerging terms in CBME**

A number of other terms in the CBME literature have emerged, especially in connection with the work of creating technical standards for the electronic transfer of information that relates to EPAs, competencies, and milestones – as in an online portfolio (Willet 2012). These terms include competency benchmark, competency framework, and
An observable ability of a health professional related to a specific activity that integrates knowledge, skills, values, and attitudes. Since competencies are observable, they can be measured and assessed to ensure their acquisition. Competencies can be assembled like building blocks to facilitate progressive development. (Frank et al. 2010)

**Competency benchmark**

Expected performance level for a cohort of learners at a given point in education, training, or practice. (Willet 2012)

**Competency framework**

An organized and structured representation of a set of interrelated and purposeful competencies. (Willet 2012)

**Competent**

Possessing the minimum required abilities in all domains in a certain context at a defined stage of medical education, training, or practice. (Frank et al. 2010)

**Domains of competence**

Broad, distinguishable areas of competence that in the aggregate constitute a general descriptive framework for a profession, such as the six domains of competence described by the ACGME (Patient Care, Medical Knowledge, Professionalism, Interpersonal and Communication Skills, Systems-Based Practice, and Practice-Based Learning and Improvement) or the seven CanMEDS roles (Medical Expert, Professional, Communicator, Collaborator, Leader, Health Advocate, and Scholar). (Englander et al. 2013)

**Dyscompetence**

Possessing relatively less ability in one or more domains of health professional competence in a certain context and at a defined stage of education or practice. (Frank et al. 2010)

**Incompetent**

Lacking the required abilities to carry out a context-specific task at the predetermined performance level for a defined stage of medical education, training, or practice.

**Entrustable professional activities**

Entrustable professional activity: An essential task of a discipline (profession, specialty, or subspecialty) that a learner can be trusted to perform without direct supervision and an individual entering practice can perform unsupervised in a given health care context, once sufficient competence has been demonstrated.

**Nested EPA**

A nested EPA is a task unit that represents a foundational subset of the KSA required for the broader EPA. As a building block for the broader EPA, the expectation for entrustment occurs at an earlier stage of the developmental trajectory. A nested EPA possesses the elements of its “parent” EPA (requires the integration of knowledge, skills and attitudes; is independently executable within a given timeframe by qualified personnel; and leads to observable and measurable outputs).

**Statement of Awarded Responsibility (STAR)**

A STAR is a formal recognition of the specific point at which entrustment for an EPA has been granted. STARS require supervisors to make deliberate decisions over time about their trainees’ competence to perform all critical activities for that EPA.

**Milestones**

Milestone: A defined, observable marker of an individual’s ability along a developmental continuum.

The authors recognize that the distinctions between EPAs and competencies are not always sharp. For example, “work in interprofessional teams to enhance patient safety and improve patient care quality” is a competency within the ACGME framework, while one of the AAMC’s core EPAs for entering residency is “collaborate as a member of an interprofessional team” (AAMC 2013) The distinction is further muddied by the lack of consensus regarding the “sizing” of EPAs. The literature has included EPAs as “small” as performing a lumbar puncture and as “large” as managing a common chronic disease in the outpatient setting (ten Cate 2013).

Nevertheless, EPAs and competencies complement each other. Together, they provide a more holistic view of a physician than either could provide independently. Applied alone, constructs of competency can result in definitions of the physician’s role that are either so abstract or so

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**The relationship between EPAs, competencies, and milestones**

The relationship between EPAs and competencies has been delineated in the literature. EPAs are *units of work*, whereas competencies are the *abilities of individuals*. One of the defining markers of an EPA is that it requires the integration of multiple competencies, usually across domains of competence. For example, an EPA may incorporate specific competencies within the domains of patient care, medical knowledge, and interpersonal communication skills (using the ACGME framework), or specific competencies in the roles of medical expert and health advocate (using the CanMEDS framework).

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Nevertheless, EPAs and competencies complement each other. Together, they provide a more holistic view of a physician than either could provide independently. Applied alone, constructs of competency can result in definitions of the physician’s role that are either so abstract or so
atomized as to become meaningless to supervisors and learners in the real-world contexts of care delivery. Further, assessment systems based solely on competencies without explicit reference to the element of trust can provide a somewhat artificial lens through which to view graded responsibilities. EPAs balance this limitation of the competency model by outlining, with high face validity, the spectrum of the health professional’s actual work. They provide a useful structure for work-based assessment and for the progression by which increasing responsibility is given to the learner. However, a competency framework remains essential; without a mapping of the competencies required for entrustment, assessors will lack a shared mental model of what constitutes readiness for an EPA. Moreover, without a competency framework to describe the complete spectrum of necessary physician abilities, the result might be an uneven or overly technical view of the physician — that is, a definition based solely on his or her work or output — and thus potentially ignore many of the specific abilities required of the twenty-first century physician, such as professionalism and advocacy.

The relationship of EPAs and competencies to milestones is a bit more confusing, since at least two models — one primarily in the US and one in Europe — are in use. Figure 1 depicts the prevailing relationship between EPAs, domains of competence, and milestones as applied in the United States. Each EPA can be linked or “mapped” to one or more domains of competence and one or more competencies in each domain. Theoretically, EPAs can be mapped to many competencies, but only a critical few of those competencies are required to reach an entrustment decision. Through its Milestones Project, the ACGME charged each specialty with developing milestones that marked the developmental progression for a specific competency. Therefore, in the US framework, a milestone is a smaller construct than a competency and represents behaviors associated with a specific level of achievement for that competency.

In Europe, milestones are conceptualized in some settings as considerably “bigger” than the EPAs or competencies, such that a milestone is a marker of the achievement of a cluster of competencies or EPAs that allows one to move, for example, from junior to senior residency. One can envision in this model a series of EPAs or competencies required for each major transition (pre-clinical to clinical years, medical school to residency, junior to senior residency, and senior residency to practice). The milestone, then, is the marker of achievement of all of the requirements for the transition from one stage of training to another. Figure 2 depicts the relationship between milestones and EPAs in this model, and Figure 3 depicts the relationship between milestones and EPAs in this model. These models are not mutually exclusive, as some institutions have created a hybrid model in which the attainment of certain competencies and EPAs together make up the “milestone” that marks a transition point in education or training. Regardless of which approach is preferred, the definitions of EPAs and milestones discussed above are still applicable.

The existence of such hybrid models reinforces the need for clear definitions and a shared language for EPAs, milestones, and competencies. Accreditation requirements are being revised to include all aspects of competency-based curriculum and assessment; some accreditation bodies have already included milestones terminology in their documents (ACGME 2013); EPAs are likely coming soon. As training programs work to ensure that their assessment processes will meet accreditation standards, consensus on the definitions of milestones and EPAs will make the process smoother.
Conclusion and next steps

Having defined the outcomes expected of a physician through frameworks such as the ACGME competencies and CanMEDS, the medical education community is moving into the next phase of CBME. This phase involves defining the developmental progression, or milestones, required to achieve those outcomes and developing frameworks such as EPAs for implementing the teaching and assessment of competencies in both undergraduate and graduate medical education. The ICBME Collaborators saw the transition into this phase as an opportunity to reexamine the language of CBME to ensure that the community proceeds on the “same page” with a shared language. As with any adaptive change, further terms will likely emerge, and existing terms will require refinement, especially as innovations in medical education continue to enrich the literature. The International CBME Collaborators are committed to following this progression and updating the medical education community at large through scholarly publications to optimize the implementation of CBME worldwide.

Disclosure statement

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Figure 3. A model of the relationship between competencies and milestones in which a series of competencies in the aggregate make up the milestone. Note that progress toward competencies for the next milestone may begin before the first milestone is attained. C: competency.


