

# Competency Based Medical Training and Evaluation. Definitions and Correlations with Real Clinical Practice

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All over the world, there is a movement in clinical education towards an approach based on competences. Recently, Canada, the United States, the United Kingdom, Australia and New Zealand, and many other countries - among it is mine, Holland - have decided to choose a framework of competences that may be a guide for the development and assessment of study plans in an immediate future. (1-5)

Two of the reasons to do it have been: 1) the need of redefining the medical competence and including elements that seem to be the most important nowadays and 2) the centralization of formation specifically in desirable results of such formation: the measurable competence of residents, and not only in the effort and knowledge that are acquired.

According to a wide survey carried out in Canada in the nineties, the general public and the medical profession defined that the specialist should be a competent communicator, collaborator, manager, health promoter, scholar and professional apart from having medical experience. These flairs are not totally new, but they are emphasized in the new model based on CanMEDS competences, which in fact, are an illustrative example for many countries around the world. (6) In the United States, the Accreditation Council for Graduate Medical Education, using a similar framework with some different nuances, emphasizes that the formation result should not be assumed from models that only require processes, as for example, the instruction duration, the quantity of practices which are set up in register books, etc. The result should be a real, observable and recognized doctors' competence at the end of their career and, not only acquired knowledge and effort in formation activities. Is this idea an original and revolutionary one? Yes, it is. Of course, all of us must strive to form doctors and competent specialists, as it always has been. But in practice, till what point do we trully recognize the competence when in fact we should do it?

Let us define the competency-based medical education (CBME) with more accuracy:

1. CBME is centered in integrated and contextualized competences.

Simply, we want to know if resident X may carry out successfully task Y in all relevant aspects of tasks. This includes not only the ability to perform it, but also the necessary knowledge, the attitude and the will

to carry it out, in certain circumstances and with the available means. Besides, the resident's professional "competence" is taken into account to solve the problem when something is wrong and the desirable result is not achieved. In what way may the resident face problems and limitations of his own capacity?

2. Basically, CBME is independent of time. Since the achieved competence is the quality criterion for the resident, we may not say that all residents acquire the competence for all essential professional tasks at the same time, for instance, when finishing instruction. Residents reach the competence for different tasks at different moments, they are not similar to each other, and formation contexts differ according to the place where they are studied.

3. Consequently, CBME should be personalized. For all and each of the residents, the competence in different tasks should be recognized at the precise moment.

4. CBME requires a professional assessment of the competence in the practice. It does not matter how psychometrically valid are standardized exams: as a last resort "professional peers" should determine the resident's performance in the practice. Maybe, this seems a subjective judgment. Actually, it is. The assessment of the medical competence is something that may not be captured integrally in "objective" assessments, but the expert eye of the professional observing the practice is necessary. The most important question that should be answered is: "May I trust this professional and critical activity X to this colleague Y?"

According to this definition, CBME is feasible? Clearly, it is a paradigm change (7) and the present practice of clinical formation together with the regulations that are applied, generally prohibits the flexibility of formation programs that CBME needs. Besides, we do not have time and the necessary abilities to assess residents in the practice. Lastly, in a more conceptual level, in what way does CBME integrate competence areas in the aforementioned frameworks and critical activities in the work area?

Many years ago, we have introduced the concept "Entrustable Professional Activities" (EPAs) to connect the competence frameworks with the clinical practice and to facilitate the application of CBME. (8-10)

EPA is defined as a part of the essential professional

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**Table 1.** Relationship between professional activities and competence areas

EPA activities	CanMEDS functions or competence areas						
	Expert doctor	Communicator	Collaborator	Scholar	Health promoter	Manager	Professional
To perform a venipuncture	•	•					
To perform an electrical cardioversion	•	○	○				○
To inform the patient's condition after being on duty	•	•	•	○		○	
To develop and implement a patient's management plan	•	○	•	•	•	•	
To chair a multidisciplinary meeting		•	•			•	•
To ask for an organ donation	○	•		•	•	•	

Black circle = the competence is absolutely necessary.

White circle = the competence is necessary but on a minor scale.

work in a given context, practicable in an independent way and at a certain, observable and measurable time in the process and results; it is an activity that leads to the recognition of results in professional work which leads to a conclusion that requires abilities, attitudes and specific knowledge that generally are acquired through instruction. This is usually confined to qualified staff and it should reflect competences whose acquisition is considered important. Competence and EPA areas are related among them as dimensions in a table [Table 1, taken from Ten Cate et al., in press (11)].

Although the assessment of competence roles in a valid way is difficult, medical teachers may observe entrusted professional activities in the practice. In order to establish the presence of essential areas of competence we have to assess a certain number of EPA activities and observe that all competence areas are covered, rather than measuring collaboration, communication or professionalism separately.

EPA concept has been used in the reform process of study plans of many postgraduate careers especially in Holland. (12-14) The more detailed application of

the model is used in the clinical formation of physician assistants (PA). Although the formation of physician assistants differs from the formation of residents, particularly due to the limited implication of medical tasks that should be carried out by assistants; the way in which EPA concept may be used as a central theme in a study plan (work area) may be an example. (15) In Holland, physician assistants are prepared to relieve specialists' work, replacing them in health tasks. All PA have at least two years of experience in health care (for example, as nurses or physiotherapists) before the enrollment in the career of physician assistant which has a duration of two years and a half. A clinical supervisor is directly responsible for a study plan in the work area. An individual study plan for each PA is designed which includes a series of general EPA activities (between 5 and 10) related to CanMEDS competence areas, as it is shown in Table 1. Then, a draft is prepared to determine when such EPAs will be dominated. The necessary knowledge and abilities for each EPA will be identified and then the PA is informed about what he should learn and practice. Subsequently, in a total study plan, the

**Table 2.** Supervision levels (1-5) planned for 5 EPA activities from an individual study program (from a physician assistant) in the work area, for a period of two years and a half

EPA activities	PA's study plan: 10 periods in 10-week blocks each of them									
	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
1. To get the medical history and physical examination in neurological patients	2	2	2	3	3	4	4	4	5	5
2. To perform lumbar punctures	1	2	3	4	4	4	4	4	5	5
3. To give special attention to patients with CVA	1	2	3	3	3	4	4	4	4	4
4. To give special attention to patients with lumbosacral radicular pain		1	2	3	3	4	4	4	4	
5. To give special attention to patients with carpal tunnel syndrome	1	2	3	3	4					

Stage 4 is referred to the planned moment for a formal decision of confidence and responsibility awarding.

appropriate supervision level that will be applied for each of the EPAs is defined (Table 2) according to the instruction stage. There are five supervision levels: 1) the knowledge and skills are not enough for the performance, 2) the total supervision is necessary, 3) the limited supervision is enough, present if it is required, 4) the unsupervised practice is possible, that is, with supervision “from the back room” and 5) the supervision and instruction may be imparted to others by the resident. In level 4, a STAR certificate is awarded; that is, a reliable decision about confidence and responsibility awarding is taken, documented on paper and signed by the supervisor and at least two more “compromised” doctors who do not belong to the program.

The group of EPA activities defines the PA's competence in the instruction and these activities are increased during the career. Some PA obtain STAR certificates quickly and they may add a bit more to the activities planned for the period of two years and a half; others are slower and they need more time, or they finish the course dominating less EPA activities. A more detailed description may be observed in Mulder et al. (in preparation).

The application of the aforementioned to the medical formation is hard work, but the fact of considering formation as the eagerness to have a “catalogue of successes” or a curriculum vitae that includes the control of critical activities, instead of assuming that all residents will achieve all the objectives from the instruction when finishing the postgraduate training, is a revolutionary and different idea and a way to focus on clinical formation based on competences.

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