

Entrustable Professional Activities: Teaching and Assessing Clinical Competence

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Entrustable Professional Activities are gaining acceptance as tools to demonstrate acquisition of competencies in a competency-based curriculum. The main advantage of Entrustable Professional Activities are that they are observable activities (thus assessable), are related to day-to-day functioning as a health care provider (thus relevant), and are awarded once the learner can be trusted to perform the activity effectively and safely, without supervision, and by integrating across different competency domains. In this article, we describe how Entrustable Professional Activities can serve as a useful learning and assessment tool. We have described the steps in formulation, the pitfalls to avoid, and the possible role of the Medical Council of India and the Indian Academy of Pediatrics in encouraging the use of Entrustable Professional Activities for executing competency-based modules.

Keywords: Assessment; Competency-based education; Curriculum; Medical education; Professional practice.

Traditional medical education is built around educational learning objectives, using processes to ensure that a graduate has knowledge, skills and attitude to perform competently [1]. Acquisition of knowledge, skills and attitudes is used as a surrogate marker for competency; unfortunately, there is a disparity between the intended outcome (competent medical practitioner) and the enacted curriculum. The problem is universal – educators globally report that training which concentrates on the acquisition of knowledge and skills may not result in a competent practitioner; learners may not be able to perform satisfactorily, or with confidence, in real time [2,3]. There is a need, therefore, to turn the focus of training programs towards the acquisition of competencies [4].

ASSESSMENT OF COMPETENCIES

The concept of competency-based medical education (CBME) has been dealt with earlier [5]. To recapitulate, competency is the measure of a person's expertise to perform the tasks he has been trained to perform. A competency-based curriculum is designed backwards, beginning from the outcome, *i.e.* by first defining the expected roles of a medical practitioner (competency domains) in the context of local health needs, and then designing the curriculum around those outcomes (outcome-based curriculum) [1,6]. **Box 1** lists the various nuances of the word 'competency' in reference to CBME.

Competencies are the building blocks of CBME. Assessment systems must be able to capture the actual competencies acquired, unlike in the traditional, process-based program where competence is presumed once the learner acquires knowledge and skills. Designing assessment for CBME is challenging. Educators worry

Box 1: DEFINITIONS RELATED TO COMPETENCY

Competency

The ability that must be acquired in order to be called competent (the medical practitioner acquires knowledge, skills and attitude and is observed to be able to perform – the Student/Practitioner has competency in managing a child with diarrhea).

Competent

The person has the competency (in a certain context at a certain stage of medical education or practice – the Student/Practitioner is competent to counsel parents of children with diarrhea presenting to a pediatric OPD).

Competence

The performance (the student / practitioner consistently performs expertly, adapting to different contexts and degrees of complexity – the Student/Practitioner manages, with competence, any child with diarrhea).

Put simply; Competency: Thing to be able to do expertly; Competent: Can do it; Competence: Does it

that competency-based curricula may assure acquisition of individual competencies, but an integration across different competency domains may not result [7]. For example, a student may acquire expertise in medical knowledge and be a competent communicator, but may not be able to apply both in an integrated manner during actual patient care. Another anticipated problem is that a learner who is competent in one setting or context (stable patient/ward) may not be as competent in another setting (hemodynamically unstable patient/emergency) [6]. Finally, CBME focuses on abilities, which means a learner shows how able he is; there may be a disparity in how able he is and how he actually performs in varying, real-life, clinical situations [2]. Clearly then, an assessment system that measures competency in an integrated manner, across a variety of clinical situations, and during actual performance would be ideal for CBME [6,7]. Entrustable Professional Activities (EPA) were developed to address these gaps between competency and actual practice.

TERMINOLOGY: TRUST, COMPETENCE AND MILESTONES

Trust

As a routine, students start with simple, easy to perform tasks, and move along over time, to more complex responsibilities. Supervision, mandatory at first, becomes less essential as competence improves. Finally, once the teacher begins to trust that the trainee has the ability and the will to apply competence, supervision becomes unnecessary. Trust, thus, is generated by real-time experiences when the trainee performs tasks at an acceptable level of competence [4]. Essentially, degree of trust (entrustability) is inversely proportional to degree of supervision – as trainee competence improves, trust builds, and the need for supervision reduces.

Decisions to trust are made on day-to-day basis (ad-hoc entrustment), but must also be made at the end of a term/course (summative entrustment) [6]. Thereafter, the learner is permitted to enact the EPA without supervision. Besides trainee competence, other factors that facilitate trust include trainee integrity, conscientiousness, reliability, and self-reflection *i.e.* a trainee who is aware of his own limitations and asks for help [9,10]. A teacher may trust a learner without even observing him, based on prior credentials (presumptive trust), or may form a good impression at the first encounter (initial trust); however, grounded trust can only occur over a period of repeated interactions and observations. Entrustment decisions (whether or not to trust the learner to perform the task) should be based on grounded trust [4].

Competence

From the perspective of Miller's pyramid model of clinical

competence, a competent person 'shows how' [11]. In EPA, the key word is trust – do you *trust* this learner to take responsibility, without supervision, for this particular professional task? If the answer is yes, the learner has demonstrated competence in the performance of the task. Entrustability is achieved when a learner performs a professional activity with such mastery that he can be trusted to perform it unsupervised in future. From the perspective of Miller's pyramid, he 'does'. EPAs, thus, are professional tasks that bridge the gap between being competent and actually demonstrating it in practice [6].

To perform a single EPA, the learner may require to be competent in several areas. For example, when we consider the EPA of 'eliciting a basic medical history', the student would have to be proficient in the competencies of 'medical knowledge', 'patient care' and 'interpersonal and communication skills'. Likewise, to 'show' a single competency, the learner may have to demonstrate proficiency in several EPAs. For example, to show competency in 'interpersonal and communication skills', the learner should be able to elicit a basic history, counsel patient about dietary practices, take informed consent for procedures/surgery, and counsel relatives about a terminally ill patient. **Box 2** summarizes the difference between learning objective and EPA.

Milestones

Competence – and therefore trust – builds over a period of time. When we consider the competency of 'interpersonal and communication skills', some aspects (sub-competencies) can be expected to be expertly demonstrated earlier in the learning curve while others would require more time. When all the particular sub-competencies – necessary to be shown before we can say that a particular competency has been achieved – are arranged on a time line, we get what are known as milestones. Each milestone signifies steps in the learner's progression; at each subsequent step, the task that the learner is expected to perform competently, without supervision, gets more and more complex [2,8,12-14]. For example, a student should become competent in eliciting a basic medical history from a patient or his relatives within a month of his posting in that discipline; however, his ability to expertly counsel a patient to give consent for a procedure/surgery may be expected to reach expert level only at the end of final year or in internship. Clearly, competencies, EPA's and milestones are inextricably linked to each other (**Fig. 1 and 2**).

DESIGNING ENTRUSTABLE PROFESSIONAL ACTIVITIES

There are many tasks expected of a medical student in each discipline; how then do we set about deciding which

Box 2: LEARNING OBJECTIVE VERSUS ENTRUSTABLE PROFESSIONAL ACTIVITY

<i>Learning objective</i>	<i>Entrustable professional activity</i>
<ul style="list-style-type: none"> • What learners are expected to be able to do at the end of an instructional intervention; the desired outcome of the intervention. • It is the minimum demonstrable and assessable change in knowledge, skill or attitude after which the learner is deemed to have successfully completed the course. Competence is assumed. 	<ul style="list-style-type: none"> • The professional task that a learner is entrusted to perform without supervision at any time during the training, or at the end of it. • The prerequisite to trusting a learner to perform a task unsupervised is his becoming competent at it. Thus, EPA is not merely acquisition of knowledge, skills and attitude, but an assessment of acquisition of one or more interlinked competencies.

to include in the list of EPAs? As a guideline, you should ask yourself what tasks a trainee can be scheduled to perform and whether an entrustment decision for unsupervised practice of that task can be documented.

When it is a question of ad hoc entrustment, there will be many tasks that one can enlist, like ‘able to assess vital signs’, or ‘able to measure intraocular pressure’; however, EPAs that lead to grounded trust – summative entrustment decisions, *after* which we trust/permit the student to perform that task unsupervised – should assess broad responsibilities and should be limited in number.

Step 1: Identify Attributes of EPA

Every specialty should identify activities that are core or critical, and are expected to be entrusted to a sufficiently competent trainee [1,15]. Include only those activities that a professional must master in order to practice with competence. An activity must fulfill the following criteria to make it an effective measure of competence [2,14,15]:

1. An EPA should be suitable for entrustment, in that it should be
 - (a) executable independently (without supervision) by an individual learner within a definite time-frame;
 - (b) it should be observable (by an expert); and
 - (c) both the process and the outcome should be measurable.

For example, ‘inserting an IV-line’ –can be executed by an individual independently, within a time-frame; it is observable, and both the process and the outcome (fluid flows freely into the vein) are measurable – this is an EPA.

2. It should be an essential professional activity in the specialty, preferably a real-life patient-care episode that requires specialized knowledge, attitude and skills such that only trained, qualified persons will perform them. For example, ‘performing a lumbar

puncture’ is a specialized skill learned through training, while ‘measuring urine output’ does not require specialized knowledge or skill – even a nursing orderly can perform it. The latter, therefore, is not suitable to be translated into an EPA.

3. It should reflect relevant competencies – the EPA should lead directly to one or more of the competencies that are required to be attained at the end of the program.

Step 2: List Areas of Competence in Different Domains

All the activities for a particular specialty should be listed, and each described briefly in a statement that tells what is expected of the learner. Against each EPA, one or more of the competencies that can be assessed should be recorded. For example, performing neonatal resuscitation requires competence in medical knowledge, patient care, procedural skills, and interpersonal and communication skills. A trainee would have to possess knowledge and

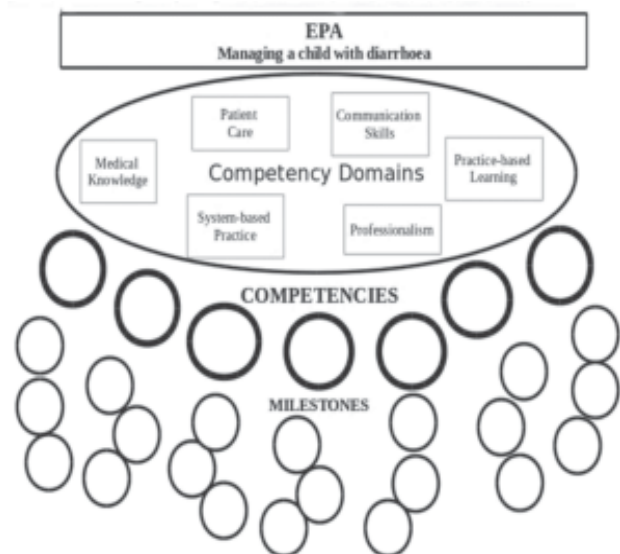


FIG. 1 Correlation between EPA, competencies and milestones.

skills to perform the procedure, would have to communicate with the child’s care-givers on the need for and the risks of the procedure, and work in a team with a nurse or a technician.

Step 3: Create Milestones

Milestones are the observable and measurable steps taken by the trainee as he moves from newbie to expert [3,14,16]; experienced specialists instinctively know these steps for their specialty. Milestones encourage trainees to progress towards appropriate levels of competence. Simpler, more frequently done, or essential tasks should be mastered sooner. The milestones chosen should be tailored to the program; they should be based on the local resources, and on the knowledge, skills, and attitudes required to meet the outcomes expected of the particular health care system. Milestones may be stratified as shown in *Fig. 2*.

Milestones should be detailed keeping in mind each of the five levels so that both the trainee and the supervisor have a benchmark against which to assess the trainees performance. Each level should have a description of observable behavior appropriate for that level, with the behavior getting more and more expert as

one advances up to level five; level five should detail the behavior expected from a master practitioner.

Step 4: Align the Milestone to Assessment (Table I)

Figure out what methods will help the teacher in deciding on whether to entrust a trainee with a task under no or minimal supervision [6]. The method must assess skills and attitude mainly, but some degree of assessment of knowledge may be required [2]. Methods could include direct observation, multisource feedback, and chart audit; teachers may use existing methods or devise new ones. The assessment may involve more than one teacher and should be a formal process. Teachers should be trained in the formulation and assessment of EPAs.

FORMULATING AN EPA [5]

To be unambiguous and effective, each EPA must include a short title, the target student, and setting(s) where it may be performed/assessed. The activity should be described in detail mentioning what it is limited to; the relevant competencies should be listed, including what knowledge, skills and attitudes are required to achieve competency; and milestones should be detailed. Finally, give the assessment method i.e. how the teacher(s) will determine whether the learner can be trusted to

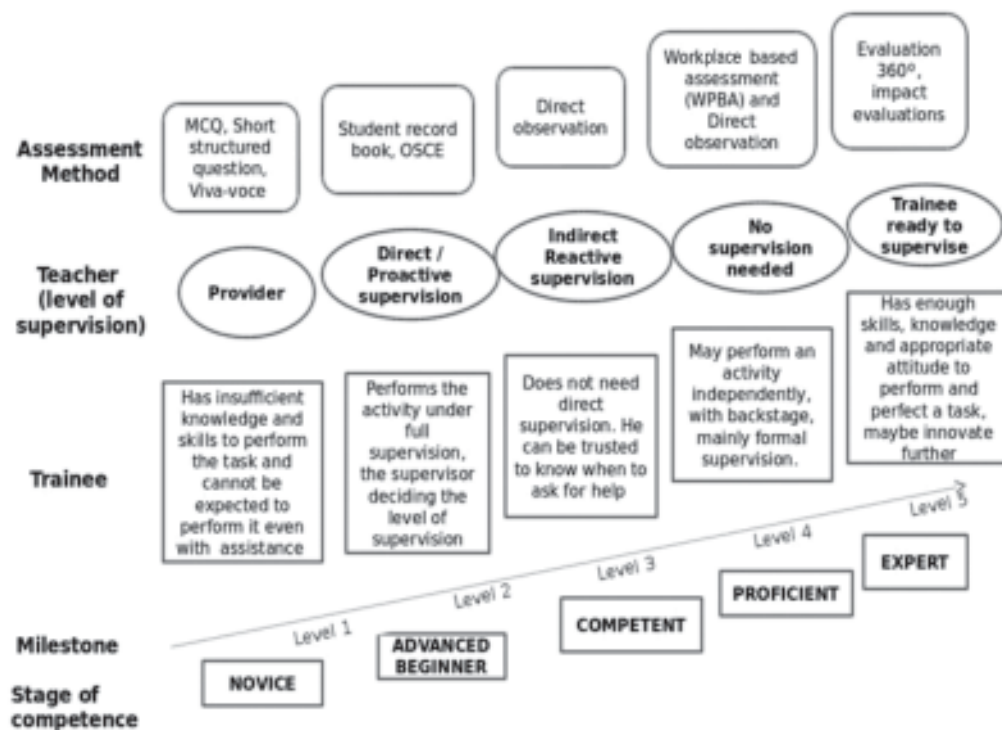


FIG. 2 Milestones: steps in the learner’s progress. Milestones define the abilities expected of the learners as they progress through training. They integrate the cognitive, psychomotor and behavioral domains. Milestones are observable and set the stage for assessment of the entrustable professional activities.

TABLE I EXAMPLE OF AN ENTRUSTABLE PROFESSIONAL ACTIVITY FOR TRAINING AND EVALUATION OF A RESIDENT IN PEDIATRICS

Title of the EPA	: Managing a child presenting with diarrhea				
Characteristics of EPA	: Executable independently, observable, measurable, essential to profession, reflects competencies, focused tasks				
Setting	: Outpatient Department, Emergency care unit, Pediatrics ward, Community				
Description	: This EPA includes the following: <ul style="list-style-type: none"> • Interacting with the child, parents, and team members • Clinical and laboratory evaluation of the child • Interpreting the history, examination and other evaluation • Making a differential diagnosis and arrive at a working diagnosis • Plan and execute management of the condition and preventing further episodes. • Working in team with other medical personal/healthcare workers • Record keeping 				
Competencies required	: This EPA requires an integration of the following competencies, each further compartmentalized in several milestones:				
<i>Medical knowledge</i>	<i>Ability to demonstrate knowledge of:</i> <ul style="list-style-type: none"> • Anatomy, physiology, microbiology of GI tract • Diseases of GI tract • Disorders presenting with diarrhea • Methods and process of evaluation of such patients 				
<i>Patient care</i>	<i>Ability to demonstrate skills of:</i> <ul style="list-style-type: none"> • Clinical examination • Performing basic lab investigations • Making the diagnosis • Planning and executing management • Writing a prescription • Administering fluids and drugs • Identifying complication and managing them • Recognizing when to seek guidance • Customizing care as per preference of patient and availability of resources 				
<i>Communication skills</i>	<i>Ability to demonstrate skills of:</i> <ul style="list-style-type: none"> • Eliciting history • Counseling the mother and family on immediate management, follow-up and prevention • Interacting appropriately with team members 				
<i>Professionalism</i>	<i>Ability to demonstrate the following attributes:</i> <ul style="list-style-type: none"> • Behaving appropriately • Ethical and compassionate handling of patient, families • Provide support (physical, psychological, social and spiritual) for dying patients and their families • Provide leadership • Recognize when it is necessary to advocate and effectively advocate • Treat patients with dignity, civility and respect 				
<i>System-based practice</i>	<i>Ability to demonstrate continued behavior of:</i> <ul style="list-style-type: none"> • Practice of rational management • Ethical practice • Understanding unique roles and services provided by local health care delivery systems • Managing and coordinating care and care transitions across delivery systems including ambulatory, sub-acute, acute rehabilitation, and skilled nursing • Negotiate patient-centered care among multiple care providers 				
<i>Practice-based learning</i>	<i>Ability to demonstrate skills of:</i> <ul style="list-style-type: none"> • Identification of areas of deficiency and improvement by self-learning • Constant updating self on recent advances • Identification of new challenges and zest to find their solutions • Identify probable areas of research and report conduct the same • Actively seek feedback from all members of the health care team • Maintain awareness of the situation in the moment, and respond to meet situational needs 				
Level of achievement of EPA	<i>level 1</i> <i>Novice</i>	<i>level 2</i> <i>Advanced</i> <i>beginner</i>	<i>level 3</i> <i>Competent</i>	<i>level 4</i> <i>Proficient</i>	<i>level 5</i> <i>Expert</i>
	At the beginning of first year of residency	At the end of first year of residency	At the end of second year of residency	At the end of third and final year of residency	As a practitioner
Assessment	Multi-source - Global evaluations, feedback, direct observation, case-based discussion, written student reflections (portfolio), MCQs, short structured questions, viva-voce, OSCE				

competently perform the activity without supervision. An example, with essential components emboldened is provided in **Table I**.

AWARDING AN EPA TO THE LEARNER [4]

Based on performance in the EPA, each student finds a place on the entrustment scale (entrustment is inversely proportional to degree of supervision) as follows:

Level 1. Not ready to be entrusted with the task (no permission to enact the EPA; observes the activity).

Level 2. Ready to perform EPA under direct, pro-active supervision (supervisor present in the room).

Level 3. Ready to perform EPA under indirect, reactive supervision (supervisor available within minutes).

Level 4. Ready for unsupervised practice (distant oversight).

Level 5. Ready to supervise junior learners in the performance of the EPA

If the learner has demonstrated over time, repeatedly, that he is capable of performing the task competently, then the supervisor knows that the learner is ready to perform without supervision, and the EPA can be awarded to that learner. Thereafter, the learner is allowed to perform that task without supervision. The particular specialty may decide when to award the EPA to the trainee. For some activities, it may be awarded when the trainee reaches level-4 of competence, but for others, particularly simple, commonplace or essential activities, level-5 may be desirable. At the end of the assessment (formative), the teacher can decide which EPA can be entrusted to the trainee, and which he is as yet not ready to be trusted with. As the learner progresses towards competency, he/she should be able to achieve EPAs of increasing difficulty, risk, or sophistication. A trainee trusted to carry out critical EPAs could be considered as performing well. A trainee who has not achieved level 4 or level 5 in one or more critical competencies may be required to continue in the course beyond its usual, expected duration. When an EPA is awarded, the learner is given a STAR (Statement of Awarded Responsibility) [6].

ADVANTAGES OF EPA [4,6,17]

- It measures real time performance, which is better than assuming that the trainee will be able to perform.
- It utilizes an expert supervisor's subjective, day-to-day observations of the trainee against a competency benchmark.
- It improves patient safety by ensuring that a trainee asked to perform a task without supervision has

previously demonstrated a high level of competence in that task.

- It encourages curriculum planners to focus on the outcomes of training as well as the process.
- It allows trainees to evaluate their learning against expectations listed in the EPA and milestone document.
- Medical competence gets measured by a portfolio of EPAs. The process is dynamic and the list may be expanded over a lifetime, with new EPAs being added, or older ones being re-learned, when required.
- Trainers, on a daily basis, have to take the call on whether or not to delegate professional activities to learners. Trust must be earned by demonstrating definite skills during activities when the supervisor is present. A trainee who is eventually entrusted to carry out all the critical EPAs could be said to be competent in the specialty. As suggested by Ten Cate, in order to promote the acquisition of competencies, perhaps medical training could change from fixed-length, variable-outcome programs to fixed-outcome, variable-length programs [1].

ROLE OF THE MEDICAL COUNCIL OF INDIA (MCI) AND THE INDIAN ACADEMY OF PEDIATRICS (IAP)

The Vision-2015 document promulgated by the MCI emphasizes a competency-based curriculum [18]. Five competency domains (roles) are outlined: Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion; Leader and member of the health care team and system; Communicator with patients, families, colleagues and community; Lifelong learner committed to continuous improvement of skills and knowledge; and, Professional who is committed to excellence, is ethical, responsive and accountable to patients, community, and profession. They have recommended the building of competency based modules. The IAP - and in fact all disciplines - should take it up from there [19]. The first step is capacity building i.e. training faculty in the principles of CBME and EPA. This can be followed by formulation of EPAs for both undergraduate and post-graduate studies.

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