Entrustable professional activities and entrustment decision-making for competency-based education in the health professions: an introduction

Olle ten Cate, Marije P. Hennus

Abstract

Since the turn of the millennium, competency-based education (CBE) has become a new standard for training in the health professions in many countries. Early work to operationalize CBE has included development of detailed frameworks of competencies that every physician should demonstrate. However, these models were criticized because they do not directly translate to everyday activities of practice. For that reason, entrustable professional activities (EPAs) were introduced in 2005. EPAs are units of professional practice that may be entrusted to trainees once they show the competencies needed to execute them without supervision. EPAs have become popular within competency-based programs in many countries, with numerous examples not only in medicine but in all health professions, including nursing, veterinary medicine, pharmacy, physical therapy, dentistry, and more. This chapter provides an overview of key foundational concepts related to EPAs. Beginning with a historical overview, the chapter provides a definition and rationale for EPAs. While competencies are qualities of individuals, EPAs are units of work. The two can be seen as dimensions of a matrix. Almost all activities in health care draw upon multiple, integrated competencies (communication and collaboration skill, professional behavior, content expertise, etc.). Next, entrustment decision-making as an approach to assessment is explained, as well as the associated framework of levels of supervision, ranging from 'allowed to observe' to 'ready to be a supervisor.' The chapter concludes with a summary of important considerations for building an EPA program.

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Introduction

Entrustable professional activities (EPAs), a concept introduced in medical education in 2005,[1] has attracted much attention among educators in the health professions. Almost 20 years and hundreds of publications later, EPAs have now been introduced in many health professional programs, in numerous countries, and across all continents. In this chapter we introduce and explain the background, nature, and use of EPAs.

Competency-based education as the soil for EPAs: a brief historical overview

Competency-based education (CBE) is rooted in a movement that started outside the health professions.[2–5] Benjamin Bloom, inspired by education scholars Tyler and Carroll, created the notion of elaborate objectives for education,[6] and launched the notion of mastery learning[7]: the idea that most learners are able to attain mastery, if given sufficient time, opportunities, and guidance. Competency-based medical education was coined in 1978[8] but only became highly popular decades later.[9]

The popularity of CBE in the health professions is unsurprising. Health care practice must be restricted, by law, to professionals who meet high standards of competence. Meeting such standards requires intensive and long periods of study, and the public must be able to put their trust in these professionals, as well as in the system that educates and assesses trainees and emerging professionals who should meet these outcome standards.

Back in the 19th century, many Western countries began to regulate the medical profession at the national level, assuming the duty to protect citizens against incompetent practitioners.[10] This led to the first conceptions of competence, and the identification of its core components for medical curricula. With the general emergence of educational objectives and the establishment of postgraduate education in the second half of the 20th century, outcome-based education, later also called CBE, then became an important guiding principle for medical educators.[11] This was followed in recent decades by undergraduate medical education and other health professions and disciplines, including nursing, veterinary medicine, pharmacy, physical therapy, and more.

Several countries have embraced CBE, using frameworks to describe the breadth of the profession in competency terms.[12–14] These frameworks (CanMEDS in Canada and the ACGME competency model in the US) have been widely adopted in various countries around the world, specifically in postgraduate medical training, which for decades was left largely unstructured. At the same time, critical voices in the literature could be heard.[15–19] The increasingly detailed competencies that had emerged in subsequent editions of national frameworks were often felt to be rather theoretical, too detailed, detached from practice, and difficult to translate into workable and reliable assessment procedures. There was a need to translate competencies better into the practice of everyday work in health care. The desire to bridge this gap between well-elaborated competency frameworks and clinical practice in patient care led to the creation of EPAs.[20]

EPAs have changed the landscape of CBE in three ways: (a) to reconceptualize the goals for training, shifting focus on competencies alone to include the tasks of health care as a focus, (b) to operationalize the individualization and time variability of training, and (c) to focus assessment on entrustment decisions for clinical tasks.

Entrustable professional activities defined, as goals of training

EPAs are the units of professional practice that constitute the tasks that clinicians (physicians, nurses, and other health professionals) do in their daily patient care work and with which trainees at some moment in their training trajectory must be entrusted.[1] These tasks can be small or big.

An attending physician on a clinical ward may be tasked to evaluate a deteriorating patient and take action to stabilize the patient's condition. This could be a typical EPA for a senior trainee in intensive care training. Similarly, a senior trainee in nursing may be asked to start providing care for an elderly patient with a complex neurological disorder and significant comorbidity. A veterinary trainee may be entrusted with suturing a dog's superficial paw laceration if nothing points toward complications. A physician assistant trainee may be asked to examine and evaluate a patient with a known chronic condition, order diagnostic tests if needed, prepare follow-up medication, and do work that only needs reviewing by a clinical staff member. These tasks can all be EPAs. Once a trainee has demonstrated they possess the required competencies for an EPA, they may be entrusted with it. A junior health profession trainee can start contributing to health care with small but significant tasks that no longer require full checks.[21] Typically, EPAs are professional activities that have a beginning and an end, are observable and measurable in their process and outcome, and are only entrusted to trained and qualified personnel, after adequate assessment. Entrustment decisions require a holistic judgment, which is more than a focus on specific knowledge or skill.

How do EPAs relate to competencies?

The distinction between EPAs and competencies is not always perceived as clear.[22] A way to think of EPAs is as the task list on a clinical ward. Administrative assistants can allocate EPAs as clinical duties to individual specialists in weekly schedules. Or EPAs could serve as duty requirements on a personnel advertisement, or they could be the to-do list in an individual health professional's calendar or notebook; EPAs are specific things that must occur in a plannable period of time. In contrast, competencies describe persons. Trainees who become competent professionals must acquire competencies that include knowledge, skills, and attitudes. These abilities allow them to perform EPAs. Professionals possess competencies but they can never 'possess' EPAs.

EPAs and competencies (or domains of competence) can be depicted as two perpendicular dimensions in a matrix model (Table 1.1). In this figure, exemplary EPAs are mapped each to the most critical domains in which the trainee should possess competence before entrustment.[23] As is clearly visible, EPAs require multiple competencies that must be applied in an integrative fashion. Even a clear task such as 'taking a patient's history' combines several domains of competence. Professionalism and communication skills are definitely necessary but medical expertise is also essential to perform a focused, efficient, and productive history.

Table 1.1: EPA and competencies as two dimensions.

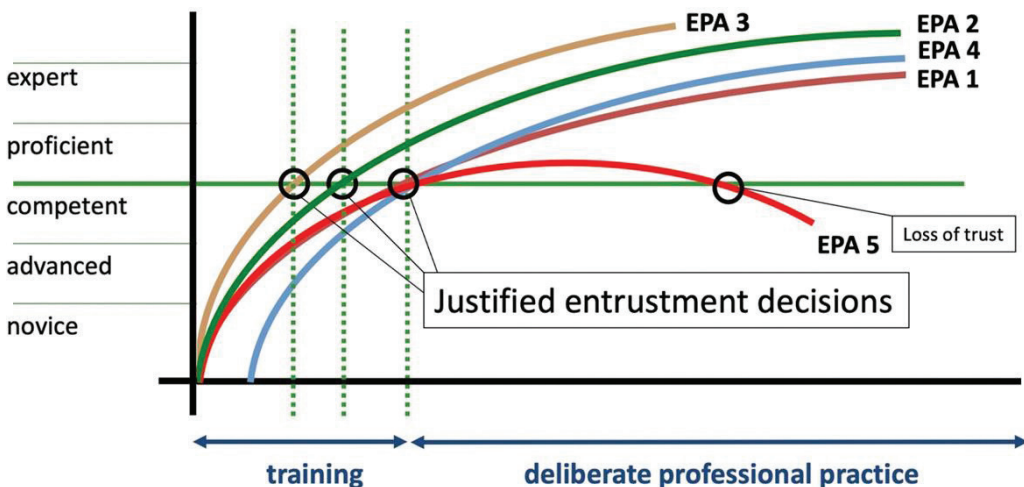| Competency domains	EPA 1	EPA 2	EPA 3	EPA 4	EPA 5	EPA 6
Medical expert	xxx	xxx	xxx	xxx	x	xx
Communicator	xxx	xxx	xxx	xx	xxx	xxx
Collaborator	x	xxx	xxx	xxx	xxx	x
Scholar	x	x	xx	xxx	x	x
Leader	x	x	x	xxx	x	xxx
Health advocate	x	x	xx	xxx	xxx	xxx
Professional	xx	x	x	x	xxx	xxx
Note: EPA 1: performing a venipuncture; EPA 2: performing an appendectomy; EPA 3: hand-over at morning report after night shift; EPA 4: developing and implementation of a patient management plan; EPA 5: chairing a multidisciplinary meeting; EPA 6: requesting an organ donation. Competencies in this domain are (x) helpful, (xx) expected, or (xxx) indispensable.						

As EPAs are units of *professional* practice, they are not *designed* for training, but rather *identified* and then elaborated for training purposes. To summarize: EPAs are not created for education, but education is created for EPAs.

Entrustment decisions

The decision to transfer a responsibility to a trainee is called an entrustment decision. Such decisions may be further characterized as *ad hoc* or *summative*. Ad hoc decisions happen every day in the clinical teaching environment. A supervisor must estimate whether the skills of the trainee at that moment match the complexity of the patient and the risks involved.[24] A summative entrustment decision has the nature of a formal qualification for the future responsibility of the trainee from that moment on. In workplace curricula with EPAs, summative entrustment decisions constitute the permission to carry out an EPA when there is sufficient grounding of trust among the staff that the trainee can bear this responsibility.[25] The trainee is evaluated on their ability, and bestowed with the right and duty to be engaged in clinical service to patients.[26] While this right is formally given at the end of training with a diploma, license, or certification, in EPA-based curricula it should be given for separate EPAs at various moments throughout the program, i.e., as soon there is a justified, grounded trust that the trainee has met the objectives of the program for that EPA. This way, EPA-based programs can be truly competency-based and not just time-based. Figure 1.1 shows this graphically. Rules and regulations may restrict autonomy, even if the trainee is competent, but there may be creative ways to reward trainees by minimizing supervision.

This figure, with time on the horizontal axis and proficiency on the vertical axis, includes a developmental framework of Dreyfus's five stages, from novice to expert.[27] 'Competent,' placed in the middle, can be regarded as the threshold for unsupervised professional practice. What the figure shows is that a *threshold bar of competence* is being passed at different moments for different EPAs.

A justified entrustment decision can be made when the educational team has been convinced that a trainee has met all conditions for summative entrustment, that is, readiness for more autonomous performance in future similar cases. Here is where trust becomes important, because no two patients and contexts are identical. To trust trainees with future health care tasks means more than observing adequate knowledge and skills as examined in tests. A benchmark question for an assessing supervisor might be: would you now trust your own family members with this trainee?[28] Sometimes, when formal assessments have been 'ticked off,' your gut might still tell you

Figure 1.1: Development of clinical proficiency of one trainee for various EPAs.

differently. Gut feelings and tacit impressions might arise that can be critical[29] and should some-how be incorporated into summative entrustment decisions. Programmatic assessment,[30] elaborated in other chapters, provides the possibility to do so. Judgments from multiple individuals and various observations are combined to arrive at summative entrustment decisions, in which there is space to include both quantified and more narrative information.

The 'threshold' means there can now be sufficient trust in a trainee to work without supervision, but it does not equate to perfection. High levels of proficiency will require continued and deliberate professional practice. If that does not occur, decay may lead to substandard practice (EPA 5 in the figure), to a level that requires supervision again, even if a justified summative entrustment decision was made before.

What is needed for entrustment?

Ad hoc entrustment decisions are made for individual trainees by individual supervisors at individual moments ('Why don't you go ahead alone with this patient? I'll be at the other ward; call me if you need me, otherwise report to me an hour from now'). Even though they happen frequently, they are determined by more factors than one would initially think, including factors that are not always consciously weighed in the decision. Grouped into five, these factors include (a) the perceived trainee features, (b) a supervisor's propensity to delegate responsibility, (c) the complexity and risks of the EPA, (d) the context, such as time of the day and the need for hands, and (e) the relationship of the clinician with the trainee.[31–36] While supervisor propensity, task complexity, context factors, and relationship all affect ad hoc decisions, trainee factors are particularly relevant for workplace-based assessment to support summative decisions of entrustment, which should be context- and rater-independent. ten Cate and Chen summarize the literature and distinguish five features[23]; together, they call these the ingredients of 'A RICH' entrustment decision, after their first letters (Table 1.2).

As *summative entrustment decisions* have a certifying nature, sometimes called a *Statement of Awarded Responsibility* (STAR),[20] they should be valid and based on sufficiently grounded trust.[25] Grounded trust for a summative entrustment of an EPA must rely on sufficient occasions and observations. A valid summative entrustment decision, with important consequences not just for the trainee but also for patient safety, requires sufficient data from a variety of sources.[33] A program of assessment, using multiple sources of information, including direct observations, longitudinal monitoring, conversations with trainees, and product evaluations is needed. In addition, knowledge and skills examinations may weigh in.[37] Entrustment, as a focus of assessment, brings a different dimension to workplace-based assessment, because entrustment decisions imply an acceptance of risk for patients and, indirectly, for trainees.[26,38] Several chapters in this book (A4, D1, D2) will elaborate on this phenomenon.

Levels of supervision

So far, we have discussed entrustment decisions related to dichotomous decisions: entrust or not yet entrust, or provide supervision or not. However, it is very useful to translate entrustment decisions to decreasing levels of supervision. Five main levels have been described (Table 1.3).

Table 1.2: Trainee features as ingredients for A RICH entrustment decision.

Agency	Sufficiently self-confident, proactive toward work, team, safety, development
Reliability	Being conscientious, predictable, accountable, responsible
Integrity	Being truthful, benevolent, patient-centered
Capability	EPA-specific knowledge and skill; experience; adaptive expertise
Humility	Observing own limitations, willingness to ask help, receptive to feedback

Table 1.3: A standard framework of levels of clinical supervision.

	Supervision level	Explanation
1	Observation only	The trainee is allowed to be present and observe, not to enact an EPA
2	Direct supervision	The trainee is allowed to execute the EPA with direct or proactive supervision; a supervisor must be physically present
3	Indirect supervision	The trainee is allowed to execute the EPA with a supervisor quickly available if needed, signifying indirect, reactive supervision
4	Unsupervised practice	The trainee is allowed to work unsupervised; a supervisor may be reachable in a phone call, but not quickly present
5	Supervising a junior	The trainee may act as a supervisor for a junior trainee for this EPA

This standard framework has been recommended widely.[20,37] While the idea of using EPAs was created for postgraduate training programs, undergraduate programs have also started applying them. This has led to more detailed levels of supervision, within this framework, for undergraduate medical education.[39]

In postgraduate medical education, there may be specialty specific supervision levels. A surgery trainee will have much closer (level 2) supervision in the operating theater than an internal medicine trainee in most of their daily practice. For an anesthesiology supervisor, the question 'can I leave the operating theater, and for how long?' is most critical.[40]

Supervision levels are often used to create scales where a trainee is or should be in their development; such scales are called entrustment–supervision (ES) scales.

ES scales, in their use for assessment, can be retrospective or prospective.[34] When ES scales are used to evaluate or assess a trainee, there are two types of questions that can be posed. The first reflects the reporting of the amount of help or supervision a trainee required in a specific, observed instance. An ES scale for such use is called 'retrospective,' that is, 'looking backward,' where the preceptor answers the question 'how much help did the trainee need?' The second type of question reflects the trainee's future need for supervision, when considering entrustment. Prospective scales, looking forward, are used to recommend a supervision level in the near future: 'Based on my observation, I recommend that this trainee, for this EPA, is ready for distant supervision.'
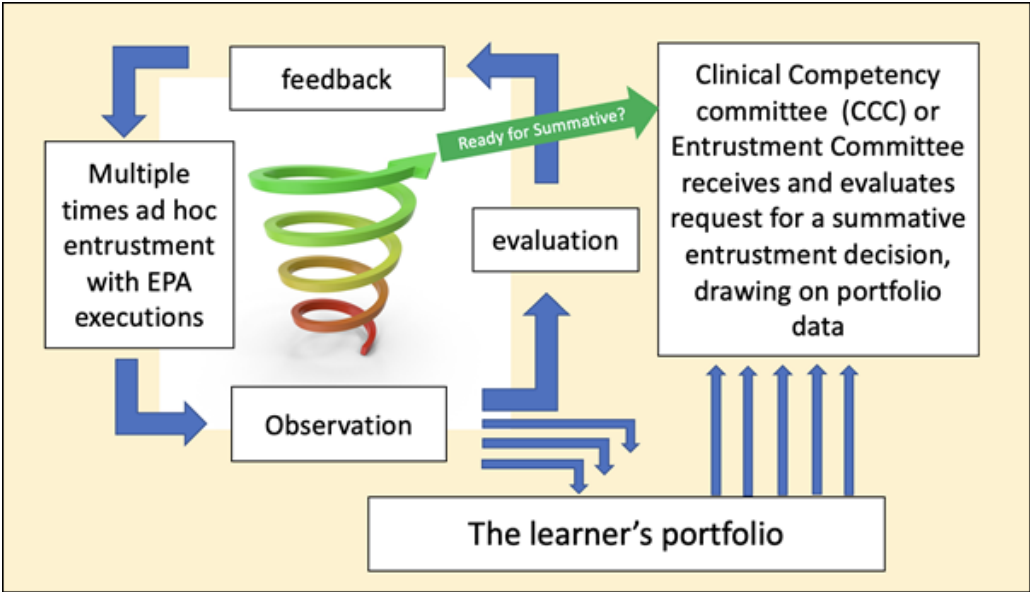
Aligned with programmatic assessment, valid summative decisions about trainees must draw from multiple data points, preferably collected in a trainee's portfolio. Ad hoc decisions of entrustment, subsequently evaluated with the trainee and leading to recommendations for future levels of supervision, serve as input (Figure 1.2).

How EPAs serve individualized curricula

For an individual trainee, for instance in postgraduate medical training, the curriculum across postgraduate years (PGY) 1 to 4, as far as EPAs are concerned, may look like the curriculum map provided in Figure 1.3. Following principles of CBE,[41] trainees should become qualified when they are ready, not just because of a fixed period of completed time. This implies that, arguably, not every trainee progresses at the same speed as their peers.

A reasonable expectation is that most trainees meet the requirements for summative entrustment decisions at the designated level for all core EPAs of their program before graduation. But some trainees may meet them earlier, while others meet them later. Besides motivation and capacity differences, family-building and research breaks may disrupt a preset schedule. Finally, not all trainees who start have an equal background. For instance, outside North America, most countries allow entry into postgraduate medical training after varying periods of supplemental licensed clinical experience.

Figure 1.2: The flow of workplace-based observation data to support summative entrustment.

Depending on the sequence of the curriculum (e.g., rotations), an initial agreement may be negotiated to specify when which levels of supervision are expected, and, most importantly, when 'level 4' (ready for unsupervised practice) can be reached. Level 5 is aspirational and might apply to a limited number of senior trainees (e.g., chief residents), and not for all EPAs. Next, monitoring of the trainee will be important, as summative entrustment decisions, by a clinical competency committee (the team responsible for these decisions), must be made judiciously and based on sufficient and valid information. This can lead to deviations from the original scheme.

	PGY 1		PGY 2		PGY 3		PGY 4	
EPA a	1	2	2	2	3	4	4	5
EPA b	1	1	2	2	2	3	3	4
EPA c	2	2	3	4	5	5	5	5
EPA d	2	3	4	4	4	4	5	5

Figure 1.3: A trainee's individualized workplace curriculum in postgraduate training.

Building a program with EPAs

The introduction of EPAs and entrustment decision-making in a program is a project in itself that must be carefully planned. Several steps should be considered, even while it is good to remember

that every profession, specialty, or country may have different constraints. These are some suggested steps, briefly summarized.

1. *Identify EPAs.* This requires a dedicated expert team and a wider group of stakeholders to arrive at consensus. The drafting of initial EPAs must be done carefully, and there are several tools to evaluate their quality. A full elaboration can be found in Hennus et al.[35]

2. *Create full EPA descriptions.* A fully elaborated EPA consists of eight components (title, specification & limitations, potential risks in case of failure, connection with a competency framework, sources of information to ground summative entrustment decisions, reasonable levels of supervision expected at stages of training, and optionally a period of expiration if the EPA is never practiced). ten Cate and Taylor elaborate on this description.[36]

3. *Create tailored opportunities for learning.* The clinical workplace cannot be recreated for learning, but trainees as well as supervisors should deliberately seek such opportunities as they present themselves in the natural course of patient care.

4. *Design a programmatic approach to assessment.* This should enable valid summative entrustment decisions and foster transparency. The infrastructure may differ for different programs but should include a mechanism to consolidate observational data into information that allows for advancement decisions and summative entrustment decisions.[30]

5. *Support individual pathways with a portfolio model.* Portfolios are increasingly considered necessary for workplace-based assessment and several commercial or home-grown EPA-based electronic tools are available.[42]

6. *Faculty development.* It will be necessary to inform and train faculty at different levels, such as frontline teachers, program directors, and members of clinical competency or examination committees.

Concluding remarks

EPAs represent an important step forward in translating CBE into health professions education practice. First introduced in 2005, EPAs have since become popular among programs of postgraduate and undergraduate education in medicine and other health professions. Examples of their use can also be found on the internet, including in video clips, courses, and other sources of information. This chapter provides an introduction to help readers understand the purpose and nature of EPAs and entrustment decision-making.

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Competing interests

The authors declare that they have no competing interests.

Figure and table justification

Table 1.1 was modified from a figure in AMEE Guide 99 by ten Cate et al. (2015)[37]; Figure 1.3 was modified from a figure by ten Cate (2014).[46] Figure 1.1 was modified from a figure in ten Cate et al. (2010).[47] Figure 1.2 was derived from a presentation created for the international Ins and Outs of EPAs online course.

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