

## CHAPTER 6

# Integrating key concepts in workplace-based assessment: entrustable professional activities, programmatic assessment, and milestones

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### Abstract

Despite their independent origins, entrustable professional activities, Milestones, and programmatic assessment are interconnected concepts within the domain of competency-based education. While some organizations prioritize the use of entrustable professional activities, others prefer using Milestones. Simultaneously, competency-based education in health professions has embraced programmatic assessment as a core concept. A question raised regularly is how the three relate and whether they can be used in combination when designing an assessment system. This chapter aims to offer definitions of the three concepts and explore their mutual reinforcement, benefiting the quality of health professions education and, ultimately, patient care. To facilitate health professions trainees' progression along their educational path and enhance their autonomy through entrustment with specific clinical tasks, every curriculum needs a program of assessment. This chapter illustrates the alignment of the three concepts and provides practical examples on how they come together in a program of assessment. In summary, the seemingly distinct concepts share more common ground than previously acknowledged. By integrating the concepts, growth in context-dependent performance from novice to expert levels can be fostered, all while promoting learning in conjunction with high-stakes entrustment decision-making.

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## Introduction

Entrustable professional activities (EPAs),<sup>1</sup> Milestones,<sup>a</sup> and programmatic assessment (PA)<sup>2,3</sup> were introduced during a period in which competency frameworks<sup>4-6</sup> and workplace-based assessment (WBA)<sup>7,8</sup> were gaining much attention. All three concepts are related to competency-based education (CBE) but have originated independently, and in different jurisdictions. The key concept behind CBE is to ensure that trainees achieve competencies essential to providing high-quality patient care. EPAs, Milestones, and PA, with their emphasis on developmental trajectories and continuous feedback, are critical to operationalizing CBE. These three interconnected concepts contribute to ensuring comprehensive and continuous evaluation of a trainee's development toward meeting required competencies. A program of assessment (PofA) is integral to CBE as it provides a framework for health professions trainees to successfully progress through their educational trajectory and acquire increasing autonomy through entrustment with concrete units of clinical work. As a foundation for the PofA, some organizations mandate the use of Milestones, others the use of EPAs to inform trainees' developmental trajectories. CBE in the health professions has embraced PA as a core component.<sup>9</sup> Accreditation bodies generally endorse all three concepts but there is a lack of clear guidelines on how to integrate them cohesively and collaboratively. Considering that WBAs form the cornerstone of PA in health professions education and serve as the practical embodiment of its core concepts, our discussion will be specifically framed within the context of WBA. General principles of WBA include:

1. contextual relevance: assessment needs to be integrated into the actual performance and work of the health professions;
2. developmentally focused and continuous feedback: informative, frequent, continual, and longitudinal feedback are critical aspects of WBA; and
3. reflecting professional standards: aligned with competencies of the profession.<sup>9</sup>

This chapter sets out to provide clear definitions of EPA, Milestones, and PA and explore where the three augment each other for the benefit of the quality of clinical education and, eventually, of patient care. We will show how the concepts align and provide some practical examples in the context of WBA in health professions education.

## Entrustable professional activities and entrustment

EPAs are the units of professional practice that constitute what clinicians do as daily work. They can be conceived of responsibilities or tasks that must be done in patient care, i.e., the work that trainees must be prepared to assume when they commence with unsupervised patient care practice. Trainees must gain experience and must grow into a professional role in the workplace phase of health professions training. Entrustment decisions about professional tasks have always been part of clinical training. What the concept of EPAs adds is a structure to build a curriculum and operationalize a PofA that allows a gradual and safe increase in responsibilities. EPAs' focus on the progression toward autonomy and unsupervised care provides a way to conceptualize developmental trajectory within health professions education. This requires assessments with an eye on both proficiency and risk. Assessment as entrustment does not *primarily* regard deci-

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<sup>a</sup> In this chapter we use Milestones (with a capital M) as defined for US postgraduate medical programs. The US Accreditation Council for Graduate Medical Education (ACGME) requires programs to report every six months on the progress of all residents on predefined Milestones for all competencies.

sions of progression but refers to decisions about quality and safety of care and, *indirectly*, about trainee progression.

The process of mastering EPAs may be regarded as ‘milestones’ toward full professional responsibility. While those ‘milestones’ are not the same Milestones in the specific sense of an accrediting body such as ACGME, the purpose of EPAs and Milestones aligns. Similarly, the literature on PA may not elaborate on EPAs but the two concepts also align well in their purpose to visualize and support trainee development and progression.

### Programmatic assessment principles

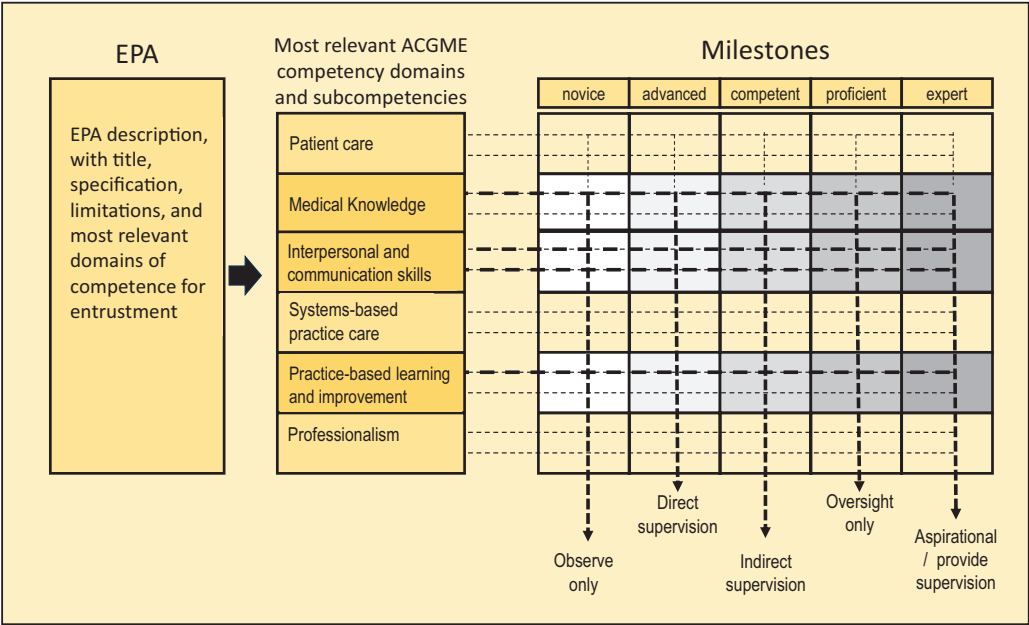
PA in health professions education, after its inception in 2005,<sup>2</sup> has been elaborated in various sets of principles.<sup>10,11</sup> As we interpret these principles, three core elements stand out:

1. Assessment of clinical competence in the workplace based on any single moment (one ‘data point’) is unreliable. In PA, a single assessment data point however should yield meaningful feedback to promote a dialogue or learning conversation with the learner (i.e., informative and low-stakes).
2. Multiple assessment data points from multiple occasions, raters, and methods, based on the educational justification for using that method and each with their own weight, are documented and aggregated to inform high-stakes decision-making. By shifting the focus to multiple assessments, a PofA based on the principles of PA can increase authenticity and construct validity without compromising reliability.
3. Equitable and credible high-stakes decisions on trainee progress or permission to practice are made by a team or committee, based on sufficient data, in a process of justifiable expert consensus.<sup>12,13</sup>

In PA, the traditional distinction between formative and summative assessment is replaced by a continuum of stakes. A single data point in WBA is usually a low-stakes assessment that does not result in a pass/fail decision, which separates data collection from decision-making. Decisions based on assessment and the number of data points required should be proportional to the stakes involved; the higher the stakes, the more data points are required. The trainee typically collects data points in an electronic portfolio that includes an outcome framework, usually with competencies or EPAs or both, to enable high-stakes decision-making. Since the portfolio contains both quantitative and qualitative data, decisions cannot be based on just numbers; holistic decisions must be made by a team of experts, such as a *competency committee* or *entrustment committee*. Workplace information sources to be aggregated to support high-stakes decision-making are summarized below. The committee oversees the aggregated data, assesses sufficiency of information, weighs data, and makes a decision about summative entrustment and trainee progress. EPAs and Milestones provide a way to conceptualize and operationalize the necessary components for making holistic decisions around advancement and entrustment.

### Milestones

Milestones are concrete behavioral descriptions following the five developmental stages proposed by Dreyfus and Dreyfus (i.e., novice, advanced beginner, competent, proficient, expert) and adopted by health professions education scholars to conceptualize developmental trajectories toward meeting competencies.<sup>14,15</sup> Linking progression to the attainment of specific Milestones and the entrustment of EPAs ensures that learners advance based on their demonstrated competence rather than time spent in training. Central to Milestones is the concept of developmental



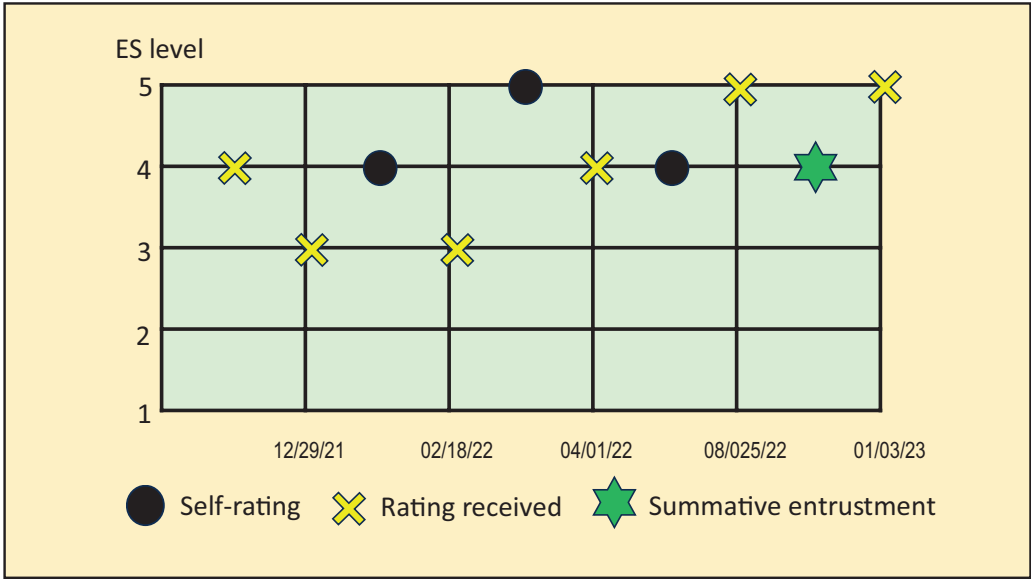
**Figure 6.1:** EPAs and Milestones combined.

trajectories and the focus on multiple assessment data that align with the key principles of PA. Reporting the Milestones for each competency for all residents every half year has been mandated in the US by the ACGME.<sup>16</sup> Milestones have subsequently been adopted for Canadian residencies<sup>17</sup> and in a number of other countries that aim to meet North American standards for postgraduate medical training. Milestones map the developmental path a trainee takes toward achieving the competence needed for unsupervised practice following graduation. With an increasing number of US residency specialties exploring the use of EPAs, several educators have posed the question of how to reconcile the two approaches and how to avoid overdocumentation.

Inspired by Warm’s semi-annual ACGME reports using the five-point entrustment–supervision (ES) scale for the internal medicine residency at the University of Cincinnati, normalized to the nine-point Next Accreditation System (NAS) Milestone rating form,<sup>18</sup> Figure 6.1 was created, adapted from earlier publications.<sup>19</sup>

Figure 6.1 shows how for each EPA various competencies within the ACGME competency domains can be evaluated using the Dreyfus developmental stages, supported by behavioral descriptions for these stages. These descriptions for each Milestone are available for all ACGME competencies in all US residency programs. In Figure 6.1, competencies and subcompetencies are depicted as horizontal dotted lines; the black arrow represents a section of the full description of an EPA: the mapping of competencies to this EPA.<sup>20</sup> These developmental Milestones align reasonably well with the five generic ES levels used in entrustment decision-making. Mink et al. recently confirmed such a correlation in a study among over 2,000 fellows in pediatrics.<sup>21</sup> For a high-stakes entrustment decision for an EPA, all relevant competencies should be evaluated. Only when all available observational data meet the previously defined standards (i.e., the set of Milestones within a given level) can a conclusion be drawn about a justified level of supervision.<sup>b</sup>

<sup>b</sup> One detail is somewhat inconsistent. As elaborated in Chapter 1, ‘competent’ was suggested to qualify a trainee for unsupervised practice. In Figure 6.1 this aligns with indirect supervision. We prefer to use ‘competent’ for having passed the threshold to allow for unsupervised practice.



**Figure 6.2:** Simple dashboard visualization for a single trainee, including multiple individual data points on an ES scale, across a year.

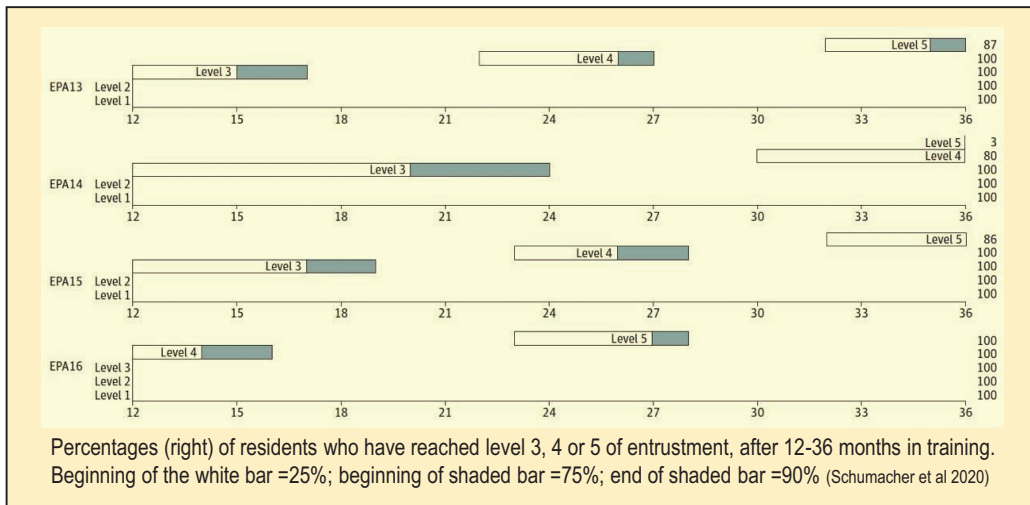
### Sources of information for workplace-based assessment

A PofA requires a definition of the data points that are included. A reasonable summary of current WBA approaches is the categorization of *sources of information* to ground major decisions about trainee progress and about high-stakes entrustment decisions with tasks in patient care. These sources can arguably be summarized in the following four categories: (a) direct observation, (b) conversation, (c) longitudinal observation, and (d) product evaluation (see Chapter 17 for a more extensive discussion).<sup>22</sup> Drawing from these four sources, a PofA can be designed to inform on competency development (i.e., through Milestones evaluations) and entrustment decisions. To that end, data from these sources are aggregated in a concise and informative format to support clinical competency committees to make decisions. These four WBA information sources are often not the only information available. Written tests and skills tests may be required for trainees during their training. While we do not consider these workplace-based information sources, they can contribute as a meaningful information source.

### Examples of program of assessment visualizations

Figure 6.2, a simple dashboard visualization, was adapted from a portfolio system for veterinary practitioners.<sup>c</sup> It is a visualization of the monitoring and self-monitoring of a recently graduated veterinarian who started as a postgraduate trainee in an emergency clinic for companion animals. The yellow marks in this example of an individual's record over a year are individual, low-stakes, WBA data points pertaining to one EPA illustrating at what level of entrustment-supervision the person has been rated at ad hoc moments for that EPA; the black marks are self-assessments of the same ES level and the green star represents a high-stakes entrustment decision. This decision is made by a committee based on aggregate information derived from the low-stakes data points

<sup>c</sup> Courtesy of Dr. Robert Favier and Theo van den Herik, Evidensia, the Netherlands.



**Figure 6.3:** Example of aggregated cohort data of residents across two training years.

(i.e., yellow and black marks). Figure 6.2 is similar to the illustration that emphasizes the assessment for learning function of high-stakes decision-making committees in PA.<sup>13</sup> By tailoring the educational process to individual learning priorities and visualizing meaningful performance-relevant information collected through WBA, PA fosters ownership and accountability. When trainees fall short of expected outcomes, predefined thresholds and historical data guide the identification of targeted support strategies. These interventions can be effectively coordinated through the competency committee responsible for high-stakes entrustment decision-making.

Figure 6.3 shows aggregated data of the development of a cohort of medical residents across 24 months, regarding four EPAs. It is just one example of how visualization can aid a competency committee in the deliberations about a program and about an individual trainee. It provides information of how an individual's performance projects against the cohort. The example is adapted from Schumacher et al. (2020).<sup>23</sup>

## Conclusion

In summary, EPAs, Milestones, and PA appear to be complementary and to have more in common than initially conceived. The three concepts pertain to the same principles of increasing responsibility, continuous feedback, using an outcomes framework as a foundation for the curriculum, and allowing high-stakes decision-making for certifying purposes. In this chapter we have argued that educational programs do not have to choose between these concepts but can instead 'have the best of three worlds.' By applying the foundational principles as a starting point, PA provides an operational framework for a CBE using both EPAs and Milestones. EPAs and Milestones are foundational to operationalizing and conceptualizing the evaluation of trainees' development toward entrustment and competence. Both EPAs and Milestones operationalize the principles of PA by ensuring that assessments are frequent, varied, and integrated over time to provide a comprehensive picture of a trainee's competence. PA ensures decision-making based on cumulative evidence rather than isolated assessments, emphasizing the development of competence through continuous learning and improvement, which are central to CBE. By integrating the three concepts, growth in context-dependent performance from novice to expert levels is fostered, and aimed at promoting learning in conjunction with high-stakes entrustment decision-making.

## Competing interests

The authors declare that they have no competing interests.

## Figure justification

Figure 6.3 is adapted from Schumacher et al. (2020).<sup>23</sup>

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