CHAPTER 14

Curriculum development for postgraduate training with entrustable professional activities

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Abstract

Entrustable professional activities (EPAs) are frequently implemented in training after licensing, in the postgraduate specialist stage of training. In this phase, trainees and supervisors must navigate the unique challenge of balancing patient care (service) and ongoing training (education). Opportunistic learning amid patient care represents a significant part of this stage of training. In this context, EPAs can play a pivotal role in scaffolding the service–education relationship and help anchor how best to operationalize workplace-based assessment. Specialty training can be highly variable across clinical settings and has many unpredictable elements. That may complicate training but it has also the benefit of building contextual agility and contextual competence.

This chapter aims to support readers and educators who are interested in building an EPA-based specialty training program. It highlights the key issues to be considered including (a) EPAs as organizational units for curriculum design, (b) things to think about in the creation of workplace curricula, (c) assessment considerations in an EPA-based postgraduate training program, (d) trainee experiences in postgraduate EPA-based curricula, (e) the role of interprofessional team members and patients in a postgraduate training program, and (f) challenges of EPA-based curricula in specialist training.

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Introduction

Entrustable professional activities (EPAs) are defined as units of professional practice that can be fully entrusted to a trainee as soon as they have demonstrated the necessary competence to execute an activity unsupervised. Initially conceived for postgraduate training, EPAs ground competency-based education (CBE), an outcomes-based approach to the design, implementation, and evaluation of education programs, in the essential activities required in clinical practice and define the transition from supervised to unsupervised practice.[1,2] Postgraduate training is also referred to as residency or fellowship training (medicine, dentistry, pharmacy, physical therapy, veterinary medicine) and often occurs post-licensure. In most health professions, licensure, or registration after completion of a degree-granting program, enables unsupervised practice without additional postgraduate training.

However, in medicine, many countries, especially in the Global North,[a] restrict practice for graduates with just a medical degree and require additional advanced training for general licensure and certification in a medical specialty for unsupervised work. Consequently, medical trainees entering postgraduate training have a license to practice, yet limited space to provide care to patients. They possess the core knowledge, skills, and attitudes (canonical competence), and have had some experience applying it in the clinical workplace (contextual competence), but they require direct or indirect supervision in performing health care tasks.[3] While expanding both canonical (that is, context-independent knowledge and skills) and contextual competence (that is, the ability to work in relevant contexts), postgraduate training provides a rich environment for the increasing development of personal practice approaches or styles (personalized competence).[3] Postgraduate training represents a phase in health professions education where trainees function as professionals with a license to practice, and thus with the right and duty to act, while also being expected to further build their competence.

Acknowledging these dual and sometimes competing roles of trainees in postgraduate training, as learners and service providers, is crucial. It necessitates a significant level of commitment and collaboration among stakeholders, including institutions, training programs, clinical supervisors, and trainees, and among patients willing to accept a trainee as their care provider. Programs and institutions need to be careful not to let service needs alone drive the curriculum of trainees (e.g., clinical duties, rotation schedules).[4] Clinical supervisors should recognize and seize opportunistic teaching moments during the busyness of daily professional duties. A supervisor in postgraduate training is often primarily a specialist practitioner who may not necessarily identify themselves as a teacher, lack defined roles in the training program, and lack training in how to supervise or teach trainees in the workplace.[5] Furthermore, they generally do not receive remuneration or time for teaching, which is expected to be squeezed into their busy clinical practice. Often their primary reason to work at teaching institutions is to perform high-level specialty practice or research, and the added expectations for supervising and teaching trainees may be experienced as a necessary burden. Recruitment of specialists is often based on service or research needs rather than teaching needs. This can affect the engagement and quality of teaching. While faculty development for clinician teachers in postgraduate education is strongly recommended, trainee agency is also important. Trainees need to actively seek out learning opportunities, request feedback, and shape the teaching encounters as necessary to meet their learning needs. Thus development in postgraduate learning settings is a dual enterprise.

In times of service stress and increased workplace needs or even during routine times, trainees' dual roles and the often-perceived tension between education and service may create a polarizing 'either/or' dynamic. This can pervade postgraduate training, both during combined teach-

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[a] The nations of the world which are characterized by a high level of economic and industrial development and are typically located to the north of less industrialized nations: Oxford Dictionary.

ing and patient care moments and in the development of the curriculum. By defining essential tasks that align with both learning and clinical responsibilities, EPAs can to some extent alleviate this potential conflict of differing or competing priorities, by creating a 'both/and' phenomenon. EPAs help to frame trainee progression with increasing ability, responsibility, and autonomy in patient care with increasing contributions to clinical service, aligning the language of education with that of the workplace. Trainees, clinical supervisors, and educational leaders can use EPAs to define and sequence the required training experiences, thereby operationalizing desired educational outcomes with safe stepwise increases in service contributions. In essence, EPAs facilitate the 'marriage' of these seemingly opposing priorities, ensuring that trainees build contextual competence (upon expanding canonical competence) and start to develop personalized competence while delivering safe and high-quality patient care.

This chapter draws from established guidelines,[6] existing literature, and expert opinion to outline key challenges and considerations for curriculum planners in postgraduate training. It covers the use of EPAs as organizational units for curriculum design, including considerations for creating workplace curricula and assessments in postgraduate training. It discusses trainee experiences, the involvement of interprofessional team members and patients, and challenges of EPA-based specialist training programs.

EPAs as organizational units for curriculum design

Curricula for postgraduate training can be envisioned at three levels, the *macro, meso* and *micro* levels.[7] The highest, macro level, is a national curriculum. The meso level is the implementation of the national curriculum by institutions and programs, and the micro level is the curriculum established at the level of the trainee.

The macro curriculum at a national level

For many health professions, national specialty boards or accrediting bodies have prescribed expected graduation competencies, program duration, basic program structure (e.g., number of rotations, balance of inpatient/outpatient experiences), and general conditions for teaching, learning, and assessment. This may include expectations around roles of individual supervisors and assessors and procedures for advancement such as the use of competency committees (see Chapter 20 for more information). Boxes 14.1 to 14.5 provide examples of national EPA implementation projects in different countries with different strategies and at various stages (roughly early, mid-stage, and advanced) at the macro level in postgraduate training programs.

The meso-curriculum at a regional or institutional level

In most countries, accrediting bodies require institutions with significant numbers of residents (university medical centers or large nonuniversity teaching hospitals) to develop a local or regional curriculum, within the national core (macro) curriculum. This meso-level program should comply with local regulations and constraints, clinical structures, and available opportunities for rotations. Often pre-EPA curricula are or were defined by list of clinical experiences or rotations and goals/objectives, possibly within a competency framework.[8] Some national curricula now include a prominent role for EPAs, to link the competency expectations to activities in practice.[9–13] For those that do not, universities and programs can choose to interpret national curriculum guidelines into an EPA-based framework with locally defined EPAs and a locally developed EPA-based curriculum (see Chapter 9).

Box 14.1: Introducing EPAs in postgraduate education in Argentina (early).

In Argentina, EPAs were first integrated in undergraduate medical education, starting in 2017 at the Instituto Universitario Hospital Italiano de Buenos Aires. Subsequently, other universities adopted EPAs. The acceptance of EPAs within the academic community grew further over time, evidenced by increased participation in workshops and conferences, and thus with an emphasis on faculty development. This led to research projects with EPAs, along with the development of local guidelines. Next, an emerging faculty network across all of Latin America arose. By 2023, recognizing the effectiveness of EPAs for CBE, the National Ministry of Health began advocating for their incorporation into residency programs. This endorsement significantly accelerated the spread of the concept and heightened the interest among health care training stakeholders. Various stakeholders, including universities, health care institutions, and scientific societies, collaborated to establish consensus on the EPAs within different specialties in Argentina. The implementation of EPA concepts in postgraduate education, particularly in competence assessment, is still in an early stage. Achieving the implementation of EPA-based specialty training will require sustained efforts of faculty development, workplace-based assessment, the documentation of practice and learning experiences, conceptualizations of supervision and entrustment, and the establishment of clinical competency committees within training institutions. Argentina's experience underscores the usefulness of networking but also the need for sustained efforts to fully integrate EPA principles into health care education curricula.

Box 14.2: Introducing EPAs in postgraduate medical education in Singapore (mid-stage).

In Singapore, the introduction of EPAs into the postgraduate year 1 (PGY1) training curriculum in 2014 was a significant milestone. Successful pilots in selected health care professions from 2019 to 2020 paved the way for a nationwide initiative to integrate EPAs within all 50 postgraduate medical residency programs. This initiative, set to unfold over four academic years starting from July 2023, aims to achieve several goals: better defining postgraduate medical residency outcomes, enhancing existing curricula to meet training objectives, and tailoring assessments that are valid, reliable, and fit for purpose.

The integration of EPAs into the curriculum has led to the definition of key milestones within the training duration, outlining residents' expected levels of entrustment at specific time points. This clear definition of learning outcomes and trajectory encourages programs to intentionally structure rotations, case exposure, and didactic sessions to support residents in reaching these milestones. Residents progressing at different paces, whether faster or slower, now have opportunities for individualized learning experiences. This could include greater opportunities to perform meaningful tasks with more distant supervision or receive targeted remediation for specific competencies within the EPAs that require improvement. Assessment content areas, defined in exam blueprints, are also themed by EPAs, ensuring consistency between the learning and assessment processes. Additionally, workplace-based assessments are stipulated as sources of information within the EPA template. This prompts programs to design on-the-job experiences that facilitate the collection of these sources of information.[22]

**Box 14.3: Introducing EPAs in postgraduate nursing education
in the Netherlands (mid-stage).**

In 2018, the Netherlands launched the CZO Flex Level project, named after the accrediting institution CZO, to reorganize postgraduate nursing training. In a nationally coordinated effort, all relevant training hospitals and education institutions in the country collaborated to redesign the postgraduate nursing education landscape, using EPAs to focus on more efficient training time, to enhance transfer across nursing specialties and to contribute to a better tuned continuum of initial education, postgraduate education, and continuing professional development. The preparatory project, involving 200 EPAs for 21 education programs, with input from large groups of health professionals, preceptors, educators, professional bodies, and trainees, was completed in 2022 and the new structure is being implemented from 2023. While data about the effect of the new structure on nursing competence, satisfaction, and career development are to be collected in the coming years, it has become clear that the project has generated enthusiasm and a strong wish to have health professions education contribute to solving major societal challenges in health care.[20]

**Box 14.4: Introducing EPAs in postgraduate medical education
in the Netherlands (advanced).**

After experiences in some specialties, EPAs were nationally implemented for all of PGME in 2017–19.[31] The impetus for this process was a government plan to shorten the duration of all the postgraduate medical programs, in an attempt to reduce the national health budget, which includes residents' salaries. The medical community was resistant but offered to explore the possibility of flexibility (i.e., time-variability) in duration. While for some residents a cut in length might work, for others this would be irresponsible, and for still a few others there may be a justified need for increased length. To operationalize this flexibility the community turned to EPAs, and, with government support and financing, all specialty curricula were rewritten at national and regional levels. Absolute rules of fixed program lengths were replaced by recommended lengths and flexibility. Residents are entitled to part-time training (80% or 90% of a full-time schedule) in the event of family building, research pursuits or other reasons. In pediatrics, anesthesia, and ophthalmology, the majority of residents work part-time, with consequent lengthening of total duration.[28] Monitoring of resident development was based upon workplace-based observation and entrustment decisions, which eventually determine their readiness for unsupervised practice. The changes were threefold: (a) from closed to open curricula with core EPAs and space for electives, (b) individualization and personalization, and (c) a shift in focus from accountability to trust.[32]

The micro-curriculum at the individual level

CBE emphasizes mastering specific skills and knowledge rather than focusing solely on training duration, and promises increased flexibility and trainee-centeredness.[14] A critical component of CBE is therefore the tailoring of learning experiences to the individual,[15] ideally allowing individualized and time-variable progression and training completion.[16,17] This is an individualized curriculum at the micro level. EPA-based curricula are particularly well positioned to allow

Box 14.5: Introducing EPAs in postgraduate medical education in Canada (advanced).

The Royal College of Physicians and Surgeons of Canada (RCPSC) launched the Competence by Design (CBD) model beginning in 2017 for all specialty and subspecialty training programs in an effort to transform Canadian postgraduate medical training to a competency-based framework.[42] EPAs for each specialty were derived from facilitated specialty committee national workshops (in-person and virtual) across all 68 disciplines, whereby leaders across Canada were brought together to shape the future standards of their discipline on a national level. Within this new CBD model, EPAs for each specialty were created to be foundational building blocks across four discrete stages of postgraduate training: transition to discipline, foundations of discipline, core of discipline, and transition to practice. In so doing, resident advancement between these stages of training required successful completion of each sequential stage-specific set of EPAs within the current stage to be promoted to the next stage of training. Over the last seven years, nearly all 68 specialty disciplines have transitioned to the CBD model in Canada through a cohort-based multi-year implementation plan. All 68 have different EPAs to match their stage-specific needs within their disciplines and evolution of the national CBD model is under way. Program evaluation efforts and national forums are driving significant quality improvement processes at the national and institutional levels.[43] In particular, a national summit process outlines the needed action plan for the second iteration of the CBD framework.[44] Key issues for improvement across the 17 institutions in Canada include decreasing the significant assessment burden that occurred with initial CBD implementation, increased separation of assessment from in-the-moment feedback and coaching moments with frontline faculty, improvements in RCPSC communications and program evaluation of the project, and enhanced support for optimization of electronic platforms available across the country.

individualized, time-variable progression based on personal patterns and rates of achievement of entrustment for the program EPAs.[6] Typically, in postgraduate training programs, graduation expectations are set at the level of readiness for unsupervised practice.[18] A trainee may achieve a level of early entrustment for some EPAs and late entrustment for others. See Figure 14.1.

A sample curricular plan with anticipated progression for an average trainee can be shared with trainees at the start. Adaptations may then incorporate prior clinical experiences of the trainee. The individualized version of the blueprint can help set expectations and serve as a learning and development contract. As individual trainees progress, there may again be deviations from the anticipated schedule, based on individual strengths or challenges, clinical experiences encountered, and other external factors. Periodic review of trainee progression should allow for adjustments to the curricular plan—ideally increasing or decreasing specific clinical experiences in rotations as needed to create trainee-specific micro-level curricula enabling achievement of entrustment for each EPA.

Individualizing a trainee's curriculum can start even before the postgraduate training program commences. In many countries, the transition to advanced medical training does not occur immediately after completion of the medical degree program but after one or more years of general clinical experience.[19] Trainees may arrive with very different clinical strengths depending on their postdegree clinical practice. Programs can use an orientation phase to map out the new trainee's experience related to the program's EPAs and create a curricular plan individualized to that trainee.

Ideally, individualized curricula arise from a collaborative effort with trainees. The success of individualized pathways depends not only on program's opportunities but also on the trainee's

Graded supervision allows for							
1 Observing the activity							
2 Acting with direct, pro-active supervision present in the room							
3 Acting with (re-active) supervision available within minutes							
4 Acting unsupervised, i.e., under clinical oversight							
5 Acting as the supervisor to a junior							

Portfolio of: *trainee Jones*	PGY1		PGY2		PGY3		PGY4	
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 14.1: A simplified sample individualized EPA-based curriculum for a postgraduate trainee across postgraduate years (PGYs) 1 through 4.

engagement. Trainees must be active agents in identifying their own learning needs, seeking out learning experiences to advance their development, and requesting adjustments to their training path to maximize their learning. This is not a natural role that trainees assume, after a history of compliance with all undergraduate education rules and regulations. It is therefore important to offer an orientation of trainees to their role for setting their own expectations, showing agency and active engagement in reviewing and planning their individual micro-level curricula (see also Chapter 12). In postgraduate nursing training and in physician-assistant training in the Netherlands, variability in sets of EPAs, tailored to individual needs, is becoming common practice.[20,21]

Issues to consider in the creation of workplace curricula

The following subsections address common questions that emerge when building an EPA-based curriculum, assuming EPAs have already been defined for the relevant postgraduate training program (henceforth referred to as program EPAs).

Structuring and sequencing learning experiences

EPAs can help structure curricula and tailor clinical learning experiences. The first step is to identify the EPA framework. Is there a national framework that can be adopted? If not, an EPA framework should be created locally. Guidelines for this step can be found in Chapters 8, 9, and 11. EPA descriptions should not only include a specification of the EPA (what privileges will a qualification for this EPA in include?) but also the required knowledge, skills, attitudes, and experiences for entrustment with the EPA.

Next, the EPA framework must be mapped to existing clinical rotations, or optional rotations for elective program EPAs. For each rotation, an analysis should be made of the activities that actually happen in this context, of experiences necessary for trainees before entrustment can be considered, how specific knowledge and skills can be learned and practiced, and the level of the trainee upon entry to the rotation. Clinical experiences related to the EPA should preferably occur across a variety of settings. Entrustment with an EPA carries an expectation that the trainee has developed the agility to perform the EPA in multiple contexts. If needed, additional practice opportunities and opportunities across contexts may be sought. Simulation should be considered for rare but important clinical conditions or when clinical practice with real patients may not be possible (e.g., urgent life-threatening situations; complex procedures with high inherent patient risks). Simulated environments offer a controlled setting for safe skill acquisition and assessment of competence that complements the workplace curriculum (see also Chapter 15).

Sequencing clinical experiences in rotations can be guided by the aim to increase responsibilities thoughtfully. When are trainees first given opportunities to practice? Are they able to begin practice in simulated or highly supervised and scaffolded environments? Use of early small EPAs that nest under later and larger graduation EPAs may help with sequencing.[6] These smaller, nested EPAs can represent subcomponents of a later, larger EPA. For example, 'obtaining informed consent' and 'initiating a procedure' can be seen as subcomponents of the larger, end-of-program EPA 'Dialysis access.' They are smaller in scope or complexity (e.g., first only in stable patients) or limited to a specific context or patient population (e.g., first only in adult patients). As trainees progress, are they deliberately allowed to practice in contexts with less supervision and assume greater responsibility? Are opportunities offered to practice with minimal supervision prior to graduation and transitioning to unsupervised practice?

In the Canadian 'Competence By Design' (CBD) model, EPAs are defined for each of four phases of postgraduate medical training: transition to discipline, foundations of discipline, core of discipline, and transition to practice (Box 14.5). Still, rotations must be identified to determine where the necessary clinical experiences occur. For example, an end-of-program EPA 'Management of pain outside the operating room' for anesthesiologists can be separated into 'Management of pain for an emergency department patient' on the emergency department rotation and 'Management of pain for an intensive care patient' on an inpatient consult service rotation. Readiness to handle pain in both contexts is needed to allow for summative entrustment decision with the full EPA. Another approach to sequencing is to take case-complexity into account. To remain with the anesthesiology example, patients' preoperative condition and anesthesia risk can be categorized in American Society of Anesthesiology (ASA) I, II, III, and IV levels of increasing complexity, and junior residents can be more readily given greater autonomy to manage an ASA I patient in the operating room than an ASA III patient.

Sequencing decisions should be based on individual program needs and the structure of the program's rotations and curricular phases. A blueprint should preferably include expected levels of entrustment for each program EPA as trainees progress through the training program. For instance, expected levels of entrustment can be noted before graduation, before the end of each training phase, and before the end of each rotation, resulting in a two-dimensional map with EPAs, rotations, and expected levels of autonomy (similar to Figure 14.1 but representing program expectations rather than an individual trainee's progression). While the program blueprint expresses expectations, in practice individual trainees differ and deviations from the blueprint will always occur.

Curricular objectives that do not directly translate to EPAs

Training in the clinical setting naturally emphasizes clinical activities or EPAs as the description of those tasks and all expected competencies could be mapped to EPAs. However, one must

acknowledge that a comprehensive curriculum includes more than training for clinical skills. The assertion that, if an objective is not reflected in a specific EPA, it is not important is not correct. Objectives such as attending to health inequities, considering climate change effects on patients, and interprofessional collaboration do not easily translate to EPAs.[23] The Royal Australasian College of Physicians and the Irish EPA-based Internship Curriculum provide a useful three-pillar framework, Do, Know, and Be, to structure postgraduate training (see also Chapters 2 and 8).[24,25] This emerged from the understanding that EPAs and entrustment, while focusing on performance of clinical tasks (*Do*), also require guidance on the essential underpinning knowledge (*Know*) and professional behaviors, values, and identity (*Be*) to ensure readiness of trainees for increased autonomy. In addition to detailing what graduates should be able to *Do* (EPAs) by the end of their training, this model also specifies what graduates should *Know* (including the ability to integrate knowledge into practice and commit to lifelong learning of evolving knowledge) to support the safe performance of EPAs. It also emphasizes how graduates should *Be* in developing their professional identity and professional behaviors (i.e., collaborator, role model, patient safety promoter), values (i.e., compassion, integrity, responsibility, etc.), and habits (i.e., reflection, lifelong learning).

Knowledge, skills, and professionalism are important *conditions* for entrustment. While *Know* and *Be* features can be attended to in EPA instructions and assessment, they often require their own, separate approaches, including lectures, online modules, regular progress testing (*Know*) or 360-degree feedback, learner reflections, and portfolios (*Be*). Four of the five trainee trustworthiness factors that enable supervisors to trust a trainee with critical health care activities (agency, reliability, integrity, and humility)[26] represent *Be* attributes and are weighed in entrustment decisions for EPAs. Calling out the *Be* expectations separately from the EPAs can help ensure the inclusion of curricula explicitly designed to support trainee development in these areas as well as assessments particularly suited to capturing these behaviors and habits.

Some components of knowledge and professional identity formation may not clearly link to EPAs. For example, knowledge of health care politics or advocacy for a healthier society can be EPA-independent and still represent important training objectives. Regardless of approach, the overall curriculum should explicitly develop and assess all competencies important to postgraduate practice, including those that cannot be easily captured in an EPA framework.

Postgraduate programs in small centers

Small postgraduate training programs based at single clinical institutions (e.g., hospital, clinic, medical center), may need to contend with limitations in service provision that can lead to inter-institutional training variation for the same specialty. For instance, a pediatric pharmacy program at a tertiary care hospital with transplant patients offers very different clinical experiences than one based at a rural community hospital with no transplant patients but other broad experiences. These limitations can conflict with the national macro-level curriculum and introduce undesirable variation in graduate outcomes at the institutional meso level. In cases of large variation in service provision, programs should consider interinstitutional partnerships to access essential experiences not available at the home training site(s) to improve standardization of training outcomes and ensure alignment with national curricular expectations.[27]

Dealing with the limitations of time-variability

Challenges arise when CBE principles, particularly those around time-variable progression or graduation of trainees, conflict with rules and regulations. While examples exist of time-variable

options,[28] many programs cannot adapt training duration for individual trainees.[29] These programs, however, may create opportunities to qualify trainees who are ready early for more autonomy and only distant supervision, sometimes called 'sheltered independence' within the program.[30] This sustains trainee growth and ability to practice greater autonomy while still scaffolded by the training program. Some institutions have piloted the idea of *promotion in place*—where post-licensure trainees remain in the training program but are given greater autonomy and responsibilities comparable with those of a faculty member, and are allowed to function as a faculty member within the institution.[30] Another approach is to incorporate more elective time into the curriculum and offer additional selective or elective EPAs to allow exploration of specialized areas of interest. The framework of EPAs for a specialty may even include elective EPAs for trainees who advance quickly. This approach enriches the learning experience and allows trainees to develop customized portfolios of supplementary EPAs showcasing their unique fit for specific employment opportunities. For others, the elective space can be used to add individualized clinical experiences for targeted trainee-centered remediation to address specific areas for improvement for those progressing more slowly. This is implemented in pediatric specialty training at University Medical Center Utrecht, the Netherlands. Customization strategies create flexibility in less flexible systems, allowing continued trainee growth while also protecting against the graduation of trainees who may not yet be ready for unsupervised practice.

Assessment considerations in an EPA-based postgraduate training program

While this chapter is focused on curricula, some attention to assessment is warranted. We highlight two key considerations important for curricular design. For a more detailed discussion of assessment in EPA-based curricula, see Chapters 17–21.

The tension between frequent observations by different supervisors and the creation of a coherent longitudinal picture of the trainee

Creating a program of assessment that does not depend on a single examiner is central to modern workplace-based assessment, with or without EPAs. This is beneficial for increasing reliability and decreasing bias. In large programs, however, this programmatic assessment runs the risk of fragmentation if every observer is a new supervisor and there is no communication with others about the trainee of interest. As the purpose of assessment is not just *of* learning but also *for* learning,[33] the provision of frequent feedback and, ideally, longitudinal ongoing support for trainee development across their various clinical experiences requires adequate monitoring across time. While individual observation episodes may include feedback and learning conversations between trainees and individual supervisors, this feedback and learning is often limited to the observed episode and less likely to address longitudinal developmental patterns or needs. Here is where the educational team, often called a clinical competency committee (CCC), plays an important role. In several jurisdictions, CCCs are required bodies comprising at least three and often more members of the active teaching faculty. The CCC reviews the progress of all residents or fellows in the program and advises the program director in making official progression decisions or summative entrustment decisions.[34] Some CCCs meet monthly; others meet with a lower frequency. Adequate competency committees have the data to monitor development of all trainees in the program and their portfolio systems allow trainees to self-monitor progress, view aggregated feedback, and recognize their own performance patterns.[35,36]

Another approach to providing coherence is through coaching. Some programs are able to incorporate a coaching program into the structure of the curriculum that can help overcome the

limitation of committees that cannot meet frequently.[37] Coaches can provide more frequent comprehensive feedback (i.e., based on all workplace-based and other assessment data received to that point) and guidance across clinical experiences in rotations to support longitudinal trainee development. While coaches can concentrate on specific skill development and performance improvement using EPAs as anchoring points, they can also encourage and track development in the *Know* and *Be* program expectations. Coaches can hold trainees accountable to the expectations around agency and engagement in their own learning plan; they can encourage trainees to seek out feedback and learning opportunities and foster trainee autonomy and accountability beyond workplace-based assessments.[38,39] They can also help trainees engage in deliberate practice[40] with setting learning targets, help interpret feedback to plan purposeful practice, and find rehearsal opportunities to improve performance. To realize their full potential, coaches should not be viewed by trainees as assessors but primarily as allies, facilitators of growth, and guides for creating their personal micro-level curricula. The Canadian CBD programs all employ coaches for the ongoing support and development of trainees.[41]

Data needed for summative entrustment decisions

A primary data source is the experiences with the performance of EPAs, reported after ad hoc entrustment decisions. However, the program of assessment should also collect data beyond EPA performance. Multisource (360-degree) feedback from peers, supervisors, interprofessional teammates, and potentially patients usually extends performance specific EPA assessments and is particularly useful to capture consistent professionalism behaviors and habits[45,46] (see Chapter 17 for more details). The combined results of these various assessments, including multisource feedback and knowledge tests, provide additional information on the *Know* and *Be* expectations not fully captured by the EPAs.

Valid summative entrustment decisions require sufficient sampling across a variety of contexts and among supervisors,[47] incorporation of both direct and indirect observation of clinical activities, and the use of both quantitative and qualitative data. These can be supplemented by artifacts from workplace activities (e.g., written notes and summaries, orthopedic cast), simulation activities and supplemented by data from the assessment in the *Know* and *Be* domains. Finally, trainee self-assessment of readiness for unsupervised practice for EPAs can provide additional insight. Portfolios and electronic dashboards[48,49] allow visualization and integration into a comprehensive picture of trainee progress; facilitate the tracking and sense-making of the multiple datapoints; support feedback, coaching, and summative decision-making; and enable the formulation of personalized learning plans and remediation strategies.[27]

Programs with a limited pool of supervisors submitting ad hoc entrustment decisions may have more difficulty achieving adequate sampling among supervisors and filling balanced competency committees. Care should be taken to maintain transparent procedures for arriving at decisions, to avoid the perception of unfairness, bias, and conflicts of interest.

Trainee experiences in postgraduate EPA-based curricula

Trainees are the center point of CBE, but few data exist regarding postgraduate trainees' perspectives on EPAs. A recent Canadian study revealed polarized views: some saw EPAs as valuable for professional growth, while others found them burdensome and disruptive to learning.[50] These perceptions were influenced by program administration, faculty assessors' engagement, and trainee behavior. The findings suggest that the trainee experience is influenced by the context and specifics for how EPA curricula are implemented. For the EPA system to function effectively, there must

be a dynamic, interdependent relationship among all three CBE stakeholders (program administration, assessors and learners), with the system's value being only as strong as its weakest link.[50]

The role of interprofessional team members and patients in a postgraduate training program

In addition to the clinical teachers and supervisors, interprofessional team members and patients play critical roles in a postgraduate training program.

Interprofessional team members, as part of the clinical community of practice, collaborate with trainees to provide patient care. However, their relationships can sometimes be challenging. Team members' trust in the trainee can serve as an additional layer of gatekeeping for patient safety and access to learning opportunities. Depending on the trainee's role within the team, they might supervise an interprofessional team member (e.g., a resident supervising a physician assistant) while simultaneously learning from this—often more experienced—team member. Similarly, not only do interprofessional team members serve as colleagues but they can also be valuable assessors of the trainees.[45] Ideally these interprofessional team members feel part of the training program and these nuanced relationships with their shifting dynamics of supervision and learning need to be taken into consideration as part of the learning and assessment process.

Patients play a role in the educational process, being part of the patient–trainee–supervisor triad. Their trust in the trainee, in their supervisor, and in the training program can affect trainee access to learning opportunities. For instance, clinical supervisors may defer to patients' preferences and limit trainee performance of a procedure despite initial intention to entrust the trainee with the procedure.[51] Patients' involvement in the learning process can also offer unique perspectives on trainee competency and bedside manner, contributing valuable datapoints to a holistic assessment of trainee abilities.[52,53] Incorporating patient feedback into the EPA portfolio or in a multisource feedback procedure can be very valuable. While patient feedback contributes to practice-based learning, it requires careful navigation of conflicting roles and power dynamics in the treatment relationship.[54] Both patients and health care professionals need to embrace vulnerability and may require facilitation and guidance to use patient feedback effectively. Addressing power dynamics, and possibly shifting toward more collaborative relationships, is crucial for engaging patients in feedback conversations and leveraging their valuable perspectives.

Challenges of EPA-based curricula in specialist training

The wide introduction of EPAs in postgraduate education, with most reports highlighting their advantages,[55,56] does not mean that implementation has not faced challenges. First, Moore et al. recently reported how EPA frameworks are too often proposed with just EPA titles, with an inherent lack of clarity and risk of implementation problems.[57] Conversely, excessive detail and too much prescriptive granularity of activities can threaten the usefulness of EPAs.[58] New programs starting with long lists of newly defined EPAs often discover they need to lump them into broader units of practice to create a feasible program. The 45 rigorously defined Dutch anesthesiology EPAs[11] were reduced, in the first year of implementation, to 28 (larger) EPAs. That number appeared more feasible for serious entrustment decisions and a program of assessment. A balanced approach is needed to ensure that EPAs are specific enough to provide clear guidance for teaching and assessment but broad enough to be practical and flexible in real-world clinical settings. Hence, it is recommended that a complete set of EPAs for a training program should range from 20 to 30 EPAs, with no more than 10 per program year.[59] Next, time-variability, an inherent feature of CBE (with or without EPAs), brings significant practical hurdles,[29,60] as has been discussed above, while

promising examples of time-variable postgraduate programs are emerging.[28,30] Finally, frequent observation and reports, features of programmatic assessment and applicable in EPA-based curricula, are often reported to be an unwelcome burden for clinical faculty as well as for trainees. The adoption of the Canadian CBD model unexpectedly increased trainee anxiety and their sense of assessment burden.[61] If EPAs become mere checkboxes that learners feel they must complete to 'pass,' EPAs can lose their original significance as units of practice for which one becomes qualified. Even if the administrative burden of workplace-based assessment for clinicians is actually less than they may perceive,[62] conditions must be created in which feedback, observation, and assessment minimally disrupt the clinical workflow; thoughtful implementation of automation with mobile devices may help.

Conclusion

Postgraduate training environments have specific challenges, primarily reflected in the need for trainees to care for patients while at the same time learning and working toward developing the competencies associated with unsupervised specialty practice. This process demands careful planning by education leaders, particularly given the complexity and opportunistic nature of the workplace learning environment. Using EPAs as a curricular framework, education leaders can begin to address tensions between education and service, implement CBE principles, and structure clinical learning experiences to support developmental progression of trainees toward unsupervised specialty practice.

Figure justification

Figure 14.1 was adapted from: ten Cate O. What entrustable professional activities add to a competency-based curriculum. *Acad Med*. 2014;89(4):691.

Competing interests

The authors declare that they have no competing interests.

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