The Implementation of Entrustable Professional Activities in Postgraduate Medical Education in the Netherlands: Rationale, Process, and Current Status

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Abstract

Postgraduate medical education in the Netherlands has adopted competency-based education since the turn of the century. In 2006, the CanMEDS competency framework was introduced.

A 2013 government plan to reduce the length and budgets of training programs led the Dutch Association of Medical Specialists (DAMS) to respond with a proposal to create more flexibility and individualization rather than a blunt cut in the length across all training programs. DAMS launched a government-funded, nation-wide, 4-year project (2014–2018) to blueprint the reform of postgraduate medical education in this direction.

To achieve competency-based individualization, the fixed duration of postgraduate programs was abandoned, and entrustable professional activities (EPAs) were introduced in all specialty programs. Implementation of this new generation of programs took place in 2017–2019 in all disciplines.

The project focused on EPA-based individualization of all programs, while addressing issues of the continuity of patient care in time-variable programs and the legal and regulatory consequences of individualization. About 30 specialty programs were revised at national, regional, local, and individual levels to incorporate EPAs; portfolio systems were adapted, clinical competency committees were installed for all programs, and procedures for summative entrustment decision making were elaborated.

This paper reports on the rationale and the process that led to a more time-variable postgraduate education landscape, and, on average, a shortening of training length by 3 months.

Curricular reform in medicine has often been qualified as multifaceted and difficult.[1] Local reforms, such as revising a single undergraduate curriculum, often take several years.[2] Appreciating and assessing needs for reform, defining objectives, choosing curricular structures, selecting teaching and assessment strategies, and implementing and evaluating a redesigned curriculum[3] all require significant effort.

The introduction of entrustable professional activities (EPAs) and competency-based education is an example.[4] The proposal to introduce EPAs (units of professional practice that can be entrusted to a learner, once he or she has demonstrated the required competence) to modify a clinical training program is one thing; the actual implementation of a curriculum is something different. Restructuring several programs simultaneously to incorporate EPAs in one institution[5] or in a specialty across institutions in one country[6] or across countries[7] requires significant additional effort.

This account reports on the implementation of EPAs in specialty training programs broadly across most medical institutions and disciplines in the Netherlands. The introduction of EPAs and time-variable training in specialty programs reflect the most recent major national innovation in Dutch postgraduate medical education. Our report elaborates on the context, rationale, and current status of this national modernization project.

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Context and Rationale

The Netherlands offer postgraduate medical training programs of 4 to 6 years for 33 registered medical specialties, plus programs of 3 years or less for family medicine, elderly care medicine, and 12 "profile doctors" (generalists in a number of sectors such as hospital medicine, emergency medicine, public health). In total, about 10,000 residents in training are employed at any time. The Medical Specialties Council (MSC) of the Royal Dutch Medical Association is responsible for residency programs and maintains quality requirements. Their Medical Registration Council (MRC), charged with the execution of the MSC rules, exerts recognition of programs, certifies program directors, and registers specialists and profile doctors. Under the Dutch Association of Medical Specialists (DAMS), a Training Council operates to develop policies to support the programs of all 33 medical specialties. Specialty societies are responsible for national curricula for residency training.

In the first decade of the current millennium, the MSC introduced competency-based medical education (CBME) mandating the CanMEDS competency framework[8] and introduced various tools to increase the quality of graduate medical education.[9] All postgraduate specialty training programs now have competency-based curricula, each under the executive control of a program director in each of the participating hospitals. However, their true competency-based nature has been questioned.[10]

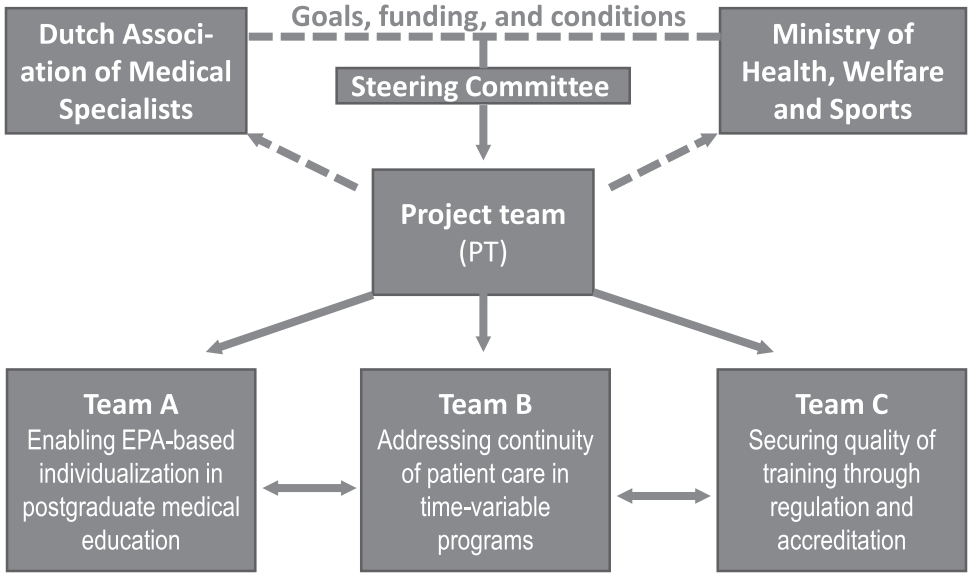

Figure 1 Project organization to develop time-variable, EPA-based PGME curricula.

Postgraduate medical training is largely financed by the national government. It involves a budget of approximately 1 billion euros, which is a component of the national expenditure on health care. Health care costs have risen to about 25% of the national budget, which has become of growing political concern.[11]

In 2013, the Dutch Ministry of Finances, seeking opportunities for health budget reductions, announced a cutback of the specialty training budget with 20% (200 million euros). Most Dutch specialty training programs exceed the minimum length required by EU directives,[12] and fixed reduction in duration across all training programs by 6 months in 2022 (yielding 59 million euros) was proposed. In a joint effort to avoid an undifferentiated cutback, the University Medical Centers, the Teaching Hospitals, and DAMS agreed to redesign postgraduate medical training, aiming at a more individualized training regimen. The general expectation was that, *on average*, the training time would reduce, serving the government's financial aims, and also that programs could further modernize in competency-based, time-variable training. Legislation was adjusted in 2014 to allow for flexible, individualized, and competency-based programs. Abandoning fixed durations had already been an anticipated agenda of DAMS.

Why EPAs Were Chosen to Create Flexibility in Training Duration

The introduction of CBME in the Netherlands had primarily stressed the objectives of training and had provided tools for assessment and personal development.[9] The CanMEDS competency model[13] had been introduced with its 7 roles (medical expert, communicator, collaborator, manager, health advocate, scholar, and professional), and portfolios became the residents' personal development document. However, the training programs remained time based, rather than becoming competency based. To realize truly individualized, time-variable training programs, a more robust model was needed to keep track of the growth and development of the resident in the workplace.

While EPAs, one decade after their launch in 2005[4,14] had increasingly been recognized in postgraduate training internationally as a viable pathway for development of CBME,[15–17] it was only after 2014 that EPAs were regarded in the Netherlands as a key component of a more flexible postgraduate training program. Competencies had been accepted as useful qualities of persons, considering knowledge, skills, attitudes, values, etc., to reflect "the ability to do something successful,"[18] but characterizing those "somethings," that is, the clinical work to be done, as the objective of training,[19] proved necessary to operationalize flexibility. The use of EPAs, as distinct units of professional practice within each specialty, as a focus of experience, training, and assessment, could shift the thinking of clinical educators to the question "is *this* resident fit for *that* task to be done?,"[20] bringing the relevant domains of competence and competencies together in an integrated fashion. EPAs were regarded a useful conceptualization to facilitate individualizing residency programs and to transition to a time-variable model.

Creating the Infrastructure for Change

In 2014, a national project called *Individualizing Postgraduate Medical Training* was launched with the support of all stakeholders. To increase the chance of success, the Health Ministry funded the development and implementation of individualized training programs with a 5 million euros project grant. The DAMS Training Council was held responsible for coordinating and fulfilling this project. The goal of the project was to establish individualized training programs geared to individual residents' competency development, flexible enough to adjust to personalized conditions for individualized duration. At the same time, the financial goal to reduce the average length of training was served by stimulating and facilitating all specialties to adhere to the negotiated deal with the Health Ministry. A slogan to communicate individual and flexible duration was that, for each resident, the program should be "*no longer than needed, and no shorter than justified*."

A project organization was established including a project team (PT), consisting of program directors and education

specialists, and a steering committee composed of stakeholders from various medical specialties. In 2014 and 2015, the PT visited all specialty societies; performed a quick scan of existing training curricula; and interviewed key players about their worries, wishes, requisites, questions, and ideas about the implications of the individualization of their training programs. All societies recognized this would be a next logical step in CBME, but most had no detailed plans to realize it. Major concerns regarded the continuity in patient care and hospital operations and the risk of extra work for program directors and supervisors to facilitate individual training programs.

The PT identified 3 overarching, challenging questions, not unlike worries voiced in the literature[21] and established 3 smaller teams (A, B, C) to support all specialty societies in the following tasks: (A) Enabling EPA-based individualization in postgraduate medical education, (B) Addressing continuity of patient care in time-variable programs, and (C) Securing quality of training through regulation and accreditation. The PT monitored the progress of the 3 teams. Each was enriched with a PhD candidate studying the implications of the theme. The PT reported to the Health Ministry every 3 months (see Figure 1).

Enabling EPA-based individualization in postgraduate medical education

Team A, operating 2015–2018, consisted of 8 educationalists. Each specialty was assigned one of them, complementing a task force with program directors and residents, to develop an individualized, EPA-based national training program for that specialty. The educationalist was the primary person to inform the task force about the concept and use of EPAs, largely backed by AMEE Guide #99 and other published guidelines for curriculum development with EPAs.[22,23]

Team A was charged with (i) Identifying and elaborating EPAs for all programs, covering the respective specialty domains and redesigning national specialty curricula; (ii) Operationalizing entrustment decision-making procedures; (iii) Facilitating and/or revising e-portfolio models; and (iv) Establishing faculty development programs. The team created guidelines for training, entrustment decision making, e-portfolios, and to guide residents in general contents such as management, education, quality control, or in specific interests for elective EPAs. The team produced guidelines for EPA descriptions; 3 instructional videos; standard slides for faculty development; a curriculum checklist and various pocket aids for program directors and supervisors; and a website to provide many tools, job-aids, and animated videos to help clarify new concepts.[24]

Identifying and elaborating EPAs and redesigning curricula. In most cases, EPAs were initially identified in small specialty groups with support of Team A. Next, the sets of EPAs were vetted against larger specialty association groups and pilot tested. This usually led to expansion of the EPA numbers, which subsequently was condensed back to a number that seemed workable and reasonable for the specialty, to uphold the importance of each EPA in their assessment and certification. In exceptional cases, a rigorous national consensus procedure was carried out.[25] Specialties legitimately differed in their choice of more procedural (e.g., "cholecystectomies," "lumbar punctures," "colonoscopies"), functional (e.g., "running the outpatient clinic"), or disease-oriented (e.g., "managing cataract patients") EPAs.[26] Table 1 shows, for all specialties, the program duration, the number of core EPAs for all residents, the number of EPAs in a subspecialty or focus area of choice, and the type of EPAs.

Operationalizing entrustment decision-making procedures. Team A elaborated criteria and procedures for summative entrustment decision making. The recognition that competency-based, time-variable education requires a more rigorous assessment of learners[27] aligned well with entrustment decision making as an approach to assessment. As entrustment decisions combine 3 acknowledgments: of competence to act (ability), of readiness for privilege to act (right), and of readiness for service (duty),[28] the alignment with clinical practice was well recognized by specialty societies.

Starting from the full EPA descriptions, the knowledge, skills, attitude, and behavior that are important in the execution of the EPAs were defined as well as the tools to assess these. Team A guidelines included the rule that, at the start of each rotation, the resident creates a plan including objectives to be achieved with a focus on the EPAs to be addressed. The resident discusses with the program director which tools will be used for observation, feedback, and assessment, such as mini-CEX and other observations, case- and entrustment-based discussions,[29] critical-appraisal-of-topics presentations, multisource feedback, reflection reports, and knowledge and skills tests, together picturing a clear learning pathway. During the rotation, the resident collects documentations for achievements in the e-portfolio. When the resident feels ready for a summative entrustment decision for an EPA, he or she submits annotated proofs of achievement to the Clinical Competency Committee (CCC). The committee meets and considers 5 elements of the request: (1) meeting the required knowledge, skills, and behavior; (2) clinical experience and relevant exposure related to the EPA; (3) any tests relating to the EPA; (4) educational and scientific activities undertaken related to the EPA; and (5) committee members' personal experience and judgment concerning the trainee. Most information about 1–4 is derived from the e-portfolio. In addition, the committees are advised to attend to the general criteria that have been acknowledged as important for entrustment: capability (specific knowledge, skills, experience, situational awareness), integrity (truthful, benevolent, patient centered), reliability (conscientious, predictable, accountable, responsible), humility (recognizes limits, asks for help, receptive to feedback), and agency (proactive toward work, team, safety, personal development),[30] acknowledging that a well-grounded decision does not only weigh "objective" criteria but also aim to include intersubjective judgment.[31]

Once the resident has demonstrated the required competence to work under distant supervision and has gained trust for the EPA, the committee makes a summative entrustment decision, documented, and motivated in the portfolio. A more extensive explanation of this process can be found in the literature.[32] Certificates of competence for EPAs (sometimes called STARs—statements of awarded responsibility[4]) are meant to have national validity and to serve the resident when transitioning

Table 1
Number and Type of EPAs Chosen in Each National Specialty Curriculum

Specialty	Standard duration (years)	Number of EPAs in program		Types of EPAs[a]		
		Core	Profile[b]	A	B	C
General internal medicine[c]	6	10	2-6	x		
Pulmonary medicine	6	19	-	x		x
Geriatrics	5	17	-	x		x
Rheumatology	6	10	-	x	x	x
Gastroenterology	6	36	2-3	x	x	x
Cardiology	6	11	-	x		
General surgery[c]	6	17	-	x	x	
Orthopedics	6	11	5	x	x	
Plastic surgery	6	23	6-8	x	x	
Urology	6	14	-	x	x	x
Anesthesiology	5	28	6-15		x	
Biological chemistry	4	17		x		
Cardiothoracic surgery	6	15	1-2	x	x	x
Dermatology	5	7	-	x		x
Emergency medicine	3	7 + 17 sub-EPAs		x		x
Medical genetics	4	30		x		
Medical microbiology	5	9		x		
Neurological surgery	6	8	2-6	x	x	x
Neurology	6	13	-	x		x
Otolaryngology	5	5	-	x	x	
Obstetrics–gynecology	6	12	-	x	x	
Ophthalmology	5	10	-			x
Pathology	5	6		x	x	
Pediatrics	5	9	-	x		
Psychiatry	4.5	10	-	x		
Radiology	5	120			x	
Radiotherapy	5	2-6		x	x	
Rehabilitation medicine	4	12	-	x		x
Sports medicine	4	9		x		

[a]EPA types: A: Roles or functions; B: Procedures; C: Disease entities.
[b]Profile: EPAs in areas of general or specific interest.
[c]General specialties share about 5 EPAs across a number of subspecialty areas.

across hospitals within, or incidentally, between academic regions during residency.

By establishing the desired level of supervision with several involved members of the training group, the aim is to achieve a well-weighted judgment. This is particularly important because the resident is allowed to perform the task independently from the moment he or she has received the certificate of competence and thus acquires greater responsibility.

Residents with summative entrustment decisions for all EPAs, having completed all rotations and other training requirements, including national exams, will receive a permission, signed by the program director, to register as a medical specialist.

A case study, instigated by Team A, evaluating CCC procedures, led to recommendations to meet 4 times per year, regularly discuss all residents, share both portfolio data and subjective information, and create feedback loops by following up on feedback to residents from previous meetings.[33]

Facilitating and/or revising e-portfolio models. All societies acknowledged that working with EPAs and entrustment decision making would only be successful if supported by a digital portfolio. The portfolio should contain forms to document observations, provide space for feedback, document clinical encounters and procedures, visualize individual growth toward unsupervised practice of EPAs, and should display information for program directors and CCCs. Team A, together with representatives of specialty societies and an external consultant, drafted conditions for e-portfolios that were negotiated with commercial parties. These providers, facing a substantial market for EPA-based products, adapted their existing models to these conditions. This yielded 5 commercial products, all geared to the revised curricula, and ready to collect the information needed for program directors and CCCs.

Establishing faculty development programs. Team A organized 6 national conferences for clinical teachers, residents, hospital boards, educationalists, and policymakers, over 300 smaller workshops for national, regional, and local training teams, for clusters of medical specialists, for specialty societies, and for mono- and multidisciplinary audiences, to facilitate cross-fertilization about approaches to develop EPAs and implement entrustment decision making as assessment, and various other meetings and master classes. Several tools and procedures were co-created to support daily training practice for frontline clinical teachers. In all, an estimated 5,000–7,000 participants benefited from these workshops and conferences.

Securing continuity of patient care in time-variable programs

Team B was charged with finding solutions for the organizational consequences of a flexible training program.

Several existing features of the Dutch medical training trajectory already serve a relatively individualized approach. One is the variable dates of graduation from medical school across the year serving small portions of the cohort. Second is the nature of the final "transitional" year of Dutch medical schools with abundant elective opportunities that allow students to gain experience in the direction of their residency choice.[34,35] Third is the open-market application procedure for residency and variable dates across the year to commence residency. Fourth is the, quite popular, legal right for residents to fulfill residency in a part-time arrangement if they wish.[36] These

conditions provide a fertile soil to create individualized, time-variable curricula.

Training and patient care are highly intertwined in postgraduate medical education, and residents contribute substantially to hospital health care production. A variable program duration for individual residents complicates the scheduling for service. As one approach to tackle this, Team B developed a digital tool, the *TOKIO Optimum Model*, to optimize staff planning for patient care, in case of fewer residents. The model charts all tasks, carried out by residents, and charts all employed health care workers in the hospital environment. For each task, minimum necessary conditions for safe patient care are documented. Finally, legal permissions and financial consequences for different health care workers doing these tasks are mapped. The tool then calculates management scenarios of redistributions of tasks. Physicians from different specialties, physicians assistants, nurse practitioners, "physicians not in training" before residency, and others then constitute a more flexible workforce. While the tool does not directly relate to EPAs, indirectly it does. EPAs are now usually defined for distinct specialties and educational programs, but clearly some of these activities can be characterized as transdisciplinary, creating organizational flexibility.

In an interview study for Team B, van Rossum et al found that time-variable curricula are possible but require effort from clinical supervisors and commitment from hospital boards; some clinicians worry that clinical experience may suffer from accelerated pathways.[37] In a cost–benefit study, the authors conclude that shortening PGME programs without losing educational quality is feasible using time-variable structures, provided that residents have obtained sufficient competence, which may however require more intense and costly educational and supervisory effort[38] to meet the standards for unsupervised practiced set for each EPA. Standard setting was done in project A with Team A. This area of development requires continued attention.

Securing quality of training through regulation and accreditation

Postgraduate medical education in European countries is bounded by European legislation on uniform qualifications and minimum program duration[12] and duty hours[39] and may be supplemented by nonbinding international collaborations, such as within the European Union of Medical Specialists.[40] In detail, however, there are many differences between countries that show national or local variations. Team C worked closely with regulating bodies to monitor effects, secure educational quality, and guarantee eligibility of programs for accreditation, while meeting the financial goals, within European and national regulations. This led the MRC registration and accreditation authority to include several sources of additional experiences as valid bases for a decision to reduce the length of an individual training program: clinical experience during the transitional year in medical school if aligned with the residency of choice; clinical experience acquired after medical school before residency as a "physician not in training" (PNIT); research experience in a biomedical PhD training trajectory before or during residency; proof of an accelerated development of competence during residency. If a program director, together with the resident involved, decides that a reduction of the program is indicated, based on any of the options, then proof of this needs to be filed in the portfolio. Ultimately, program director and resident must be convinced that the relevant EPAs in the program are adequately addressed, a negotiation for which the project has developed guidelines. As of January 2020, the variation on average length across 26 programs and 1,082 residents ranged from −0.69% (0.5 months of a 6-year program) to −9.76% (−7.0 months of a 6-year program). Across all programs, the average length decreased with 3 months per 5 program years as a result of individualization. In practice, PNIT experience and acceleration combined with part-time employment established the largest sources of discount.

Discussion

The Dutch national project *Individualizing Postgraduate Medical Training* executed in a 6-year period (2014–2019), resulted in 3 major accomplishments: (a) the introduction and implementation of EPA-based national training programs in all medical specialties, supported by digital portfolios; (b) the introduction and implementation of time-variable training programs; and (c) organizational condition to combine flexible programs with continuity of safe patient care.

While in general the project can be qualified as a success, that did not hold for all components. The government aim was to enable a budget decrease; the aim of DAMS was to individualize training and make it time variable. As of January 2020, an overall average reduction of training length across programs of 3.11 months was accomplished and accepted by the Ministry of Health. This was less than the Ministry's objective but a decrease of residency positions completed its budgetary target.

The introduction of EPAs can definitely be viewed as a successful innovation that did not exist before. While DAMS generally met with cooperation of the specialty societies, the word "individualization" also received resistance during the project, as it became interpreted as a nickname for "cutback." To some extent, this was true. Not only did the average length decrease across all residents, but also the flipside of individualization, that is, lengthening for those who need it, did not happen much, and was not easy to accomplish. The individualization however made it possible to maintain standards against an implicit pressure to cut back and only to decrease training length for those individuals who had been observed to meet the standards sufficiently.

The introduction of time variability increased the awareness how much health care in teaching hospitals depends on residents. The TOKIO tool was not so much created to enhance training, competence, or EPA introduction, but rather to mitigate the side effects of time-variable training and decreased availability of residents. This may be a reason why the instrument has only been used by a quarter of all teaching hospitals, which is not as much as anticipated.

Part of the success of the project can be attributed to conditions that were already in place: PNIT experiences; a transitional year in medical schools; variable dates of graduation from medical school; and the open, not time-bound, application process for residencies and part-time options, conditions that may not exist in other countries.

One major lesson learned is that a national reform at this scale requires a significant change of culture, which takes time. Implementing EPAs, a key element of the project, is a dynamic, iterative process that requires continuous evaluation and adaptations in a PDCA (plan–do–check–act) cycle.

Another lesson was that it proved possible to create a climate in which trainees have the possibility to work with almost full responsibility while still in training. Autonomy of residents has been curtailed in the past decades for the sake of patient safety in teaching hospitals, leaving young graduates poorly prepared for unsupervised practice, consequently jeopardizing patient safely after training. The project has convinced many that an EPA model allows to progress stepwise to working with distant supervision, resulting in a better preparation to working unsupervised as a specialist.

We also learned that the purpose of health care service provided by residents is to enable learning. This does include accumulating required patient care experiences, striking a balance with learning, service, and well-being of residents. Having time variability on the agenda enables negotiating this balance. It appeared that a lead position of residents in this process was important to success.

In such a large project, we found that preparations, a powerful project structure, and even small details such as the structure of the ePortfolio should all be in sync to push in the same direction. Well-informed educationalists hired to guide the various groups and who frequently interacted proved to be key to keep this coordinated effort well on track.

While this project enabled a huge step forward in individualizing postgraduate medical education in the Netherlands, in which EPAs played an essential role, monitoring of ongoing effects is needed to evaluate its overall impact long term.

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