



# How can Entrustable Professional Activities serve the quality of health care provision through licensing and certification? Comment mettre à profit les activités professionnelles confiables pour favoriser la qualité des soins de santé par le biais du titre de licencié et du certificat ?

Olle ten Cate

Volume 13, Number 4, 2022

New thinking on medical licensure in Canada  
Nouvelle réflexion sur le permis d'exercice de la médecine au  
Canada

URI: <https://id.erudit.org/iderudit/1092118ar>  
DOI: <https://doi.org/10.36834/cmej.73974>

[See table of contents](#)

Publisher(s)

Canadian Medical Education Journal

ISSN

1923-1202 (digital)

[Explore this journal](#)

Cite this article

ten Cate, O. (2022). How can Entrustable Professional Activities serve the quality of health care provision through licensing and certification? *Canadian Medical Education Journal / Revue canadienne de l'éducation médicale*, 13(4), 8–14. <https://doi.org/10.36834/cmej.73974>

Article abstract

This paper about Entrustable Professional Activities (EPAs) was solicited to support the discussion about the future of licensing within the Medical Council of Canada. EPAs, units of professional practice to be entrusted to learners or professionals once they have shown to possess sufficient competence, were proposed in 2005 to operationalize competency-based postgraduate medical education and have become widely popular for various health professions education programs in many countries.

EPAs break the breadth of competence for license down to units of practice that can be overseen, assessed, monitored, documented, and entrusted. EPAs together may constitute an individual's portfolio of qualifications, and define a scope of practice. A medical license and a specialty certification can then be defined as the required combination of EPAs for which one is qualified at any specific moment in time. That 'snapshot' could change over time and reflect the professional development of the individual, both in their competence and in their privileges to practice. Micro-credentialing and digital badges might become an adequate option to show-case one's scope of practice at any time and operationalize the idea of a dynamic portfolio of EPAs.

© Olle ten Cate, 2022



This document is protected by copyright law. Use of the services of Érudit (including reproduction) is subject to its terms and conditions, which can be viewed online.

<https://apropos.erudit.org/en/users/policy-on-use/>

**érudit**

This article is disseminated and preserved by Érudit.

Érudit is a non-profit inter-university consortium of the Université de Montréal, Université Laval, and the Université du Québec à Montréal. Its mission is to promote and disseminate research.

<https://www.erudit.org/en/>

## How can Entrustable Professional Activities serve the quality of health care provision through licensing and certification? Comment mettre à profit les activités professionnelles confiées pour favoriser la qualité des soins de santé par le biais du titre de licencié et du certificat?

Olle ten Cate<sup>1</sup>

<sup>1</sup>University Medical Center, Utrecht, The Netherlands

Correspondence to: Olle ten Cate, PhD, Utrecht Center for Research and Development of Health Professions Education, University Medical Center Utrecht, P.O. Box # 85500, 3508 GA Utrecht, The Netherlands; phone: +31.88.75.57010; email: t.j.tencate@umcutrecht.nl.

Published ahead of issue: March 15, 2022; published: Aug 26, 2022. CMEJ 2022, 13(4) Available at <https://doi.org/10.36834/cmej.73974>

© 2022 ten Cate; licensee Synergies Partners. This is an Open Journal Systems article distributed under the terms of the Creative Commons Attribution License. (<https://creativecommons.org/licenses/by-nc-nd/4.0>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is cited.

### Abstract

This paper about Entrustable Professional Activities (EPAs) was solicited to support the discussion about the future of licensing within the Medical Council of Canada. EPAs, units of professional practice to be entrusted to learners or professionals once they have shown to possess sufficient competence, were proposed in 2005 to operationalize competency-based postgraduate medical education and have become widely popular for various health professions education programs in many countries.

EPAs break the breadth of competence for license down to units of practice that can be overseen, assessed, monitored, documented, and entrusted. EPAs together may constitute an individual's portfolio of qualifications, and define a scope of practice. A medical license and a specialty certification can then be defined as the required combination of EPAs for which one is qualified at any specific moment in time. That 'snapshot' could change over time and reflect the professional development of the individual, both in their competence and in their privileges to practice. Micro-credentialing and digital badges might become an adequate option to show-case one's scope of practice at any time and operationalize the idea of a dynamic portfolio of EPAs.

### Résumé

Cet article sur les activités professionnelles confiées (APC) a été sollicité pour alimenter la discussion sur l'avenir du titre de licencié au sein du Conseil médical du Canada. En 2005, il a été proposé de se servir des APC, unités de pratique professionnelle qui peuvent être confiées aux apprenants ou aux professionnels une fois qu'ils ont démontré avoir le niveau de compétence nécessaire, pour opérationnaliser la formation médicale postdoctorale basée sur les compétences; depuis, elles sont devenues courantes dans les programmes de formation aux professions de la santé dans de nombreux pays.

Les APC décomposent l'étendue des compétences pour l'obtention d'une licence en unités de pratique qui peuvent être supervisées, évaluées, contrôlées, documentées et confiées. Ensemble, les APC peuvent constituer le portfolio de qualifications d'un individu et définir un champ d'exercice. Le titre de licencié et le certificat de spécialité peuvent alors être définis comme représentant la combinaison d'APC qu'une personne est qualifiée à exercer à un moment donné. Ce « cliché instantané » peut changer au fil du temps, reflétant le développement professionnel de la personne, tant sur le plan de ses compétences que de ses privilèges d'exercice. Les micro-titres de compétences et le badge numérique pourraient devenir une option adéquate pour présenter à tout moment le champ de pratique d'un médecin et rendre opérationnelle l'idée d'un portfolio dynamique d'APC.

## Introduction

The question addressed in this solicited paper is whether the application of the concept of Entrustable Professional Activities (EPAs) for decisions about medical licensing, particularly in the Canadian context, can strengthen Medical Council of Canada's aim to secure the highest level of medical care as derived from assessment procedures.

## Principles of Entrustable Professional Activities for education and assessment

### What are EPAs?

EPAs have enjoyed huge interest in all domains of health professions in many countries and constitute an important area of ongoing scholarly work.<sup>1-4</sup> In the literature, EPAs have been called objectives for education, a tool for assessment and sometimes even specific competencies. It is useful to reiterate here that each of these alone are not the best characterizations of EPAs.

EPAs are 'units of professional practice' that can be entrusted to learners or professionals once they have shown to possess sufficient competence to perform them in professional practice;<sup>5</sup> no less, no more. These units can be conceived of as tasks or bundles of tasks. To help the understanding, one can conceive of EPAs as items listed in personnel advertisements, work schedules, agendas, or to-do lists. They are not qualities of individuals, but comprise the work individuals in health care are expected to do.

EPAs can manifest in different ways. Examples are acting as the consultant for other specialties, running the Tuesday morning clinic, leading interprofessional health care team meetings, prescribing and managing immunomodulatory therapies, managing patients with cataract, resuscitating and stabilizing acute care patients, administering vaccinations, echocardiography, and performing medical autopsies. EPAs can range from being very small and specific (administering a vaccine) to very broad (covering the weekend ICU service, or, even, managing a department), and for educational purposes small EPAs can be the focus for early learners, but subsumed under (or 'nested within') broader EPAs for more advanced learners or professionals.<sup>6</sup>

### How do EPAs differ from competencies?

While seemingly self-evident, it is useful to define competencies, because EPAs and competencies are easily conflated. "Competency" has been defined in dictionaries as "the ability to do something successfully or efficiently,"<sup>7</sup> "the possession of sufficient knowledge or skill in a specific

area"<sup>8</sup> and "the capacity to deal adequately with a subject."<sup>9</sup> Clearly, competencies are properties of individuals.<sup>10</sup> While the competency is the *ability* to do something successfully or efficiently, the EPA is that *something* that is being done successfully or efficiently. When educators say that 'administering vaccines' or 'resuscitation' is a competency, what they really mean is that *the ability to do so* is a competency, and EPAs are the objects of these competencies. The distinction is not trivial. Competencies in health care, structured in the CanMEDS framework of seven domains of competence (medical expertise, communication skill, collaboration skill, scholarly skills, professionalism, health advocacy skill, and leadership skill) are often needed in consort, in an integrated fashion, to qualify for readiness to perform an EPA. It is conceptually confusing to qualify "Resuscitation" as a competency under any of the domains of CanMEDS, as it requires most of these domains. Think of it this way. An every-day EPA for a child could be "getting milk at the grocery store"; an activity that would require a critical parental entrustment decision. The child would need to ride the bike, find the store, find a pack of milk, pay at the cashier, ride back, while having communicated with shop staff, observed traffic dangers, et cetera. The task as a whole (being holistic) would require many competencies in consort. The EPA would really be something that contributes to family household business. Likewise, a "unit of professional practice" (EPA) in medicine is a contribution to health care.

### Competency-based medical education and practice as the purpose of EPAs

EPAs were coined to operationalize postgraduate competency-based medical education (CBME).<sup>5,11</sup> CBME, in one of its older descriptions, is organized around functions required for the practice of medicine in a specified setting, and assumes that, in principle, all medical students can master the basic performance objectives to become "a health-professional who can practice medicine at a defined level of proficiency, in accord with local conditions, to meet local needs."<sup>10,12</sup> It includes canonical knowledge and skills that do not depend on the context of practice, as well as context dependent knowledge and skills.<sup>13,14</sup>

Curricula using EPAs should specify when which activities can be performed under which conditions in which contexts. EPAs break the breadth of competence for license down to units of practice that can be overseen, assessed, monitored, documented, and entrusted. The philosophy of using EPAs is that learners and professionals

are permitted and asked to contribute to patient care to the extent they are qualified, based on EPAs for which they have been certified.<sup>15</sup> EPAs both focus on making the competencies required for licensing and certification more manageable and transparent, and on spreading licensing decisions over time for units of professional practice.

The ultimate goal of using EPAs is to secure safe, competency-based medical practice. CBME, as a movement to improve the general quality of health care through training, aims to 'deliver' graduates and specialists only if they meet the expected standards. Studies show that this aim is not always reality<sup>16-19</sup> and an effort to decrease the fraction of false-positive licensing and certification decisions is warranted.

### Trust, entrustment decision making, and level of supervision as guiding concepts

Entrustment decisions mark the moment of permission to act in patient care. Ad hoc entrustment decisions happen on a daily basis during clinical rotations when a clinical supervisor decides to 'leave the room' or to 'accept a learner's report without a further check' because there is sufficient trust in the learner's autonomous contribution.<sup>20</sup> These decisions are often implicit and do not include a promise for the same level of autonomy in future cases. Summative entrustment decisions are different. They do imply a form of credentialing or certification.<sup>i</sup> As EPAs were originally conceived for postgraduate training, summative entrustment decisions signify the moment that allows residents to work with only distant supervision, based on sufficient information to ground that decision, made by a clinical competency committee. With the use of EPAs in undergraduate education, a summative entrustment decision would usually signify the moment after which students are trusted to act in patient care with only "indirect supervision" (i.e. with a supervisor not present but quickly available). This way, entrustment and supervision (ES) translate into scales with various levels. Such ES-scales have been published in various forms but are best used as a prospective scale, i.e. with the purpose to signify or mark a decision about future autonomy (or a recommendation for that autonomy).<sup>21,ii</sup>

### Information needed to support valid summative entrustment decisions

As with any summative assessment decision, entrustment decisions require sufficient information to support validity. In ad-hoc situations in the clinical environment several factors determine whether a learner is being permitted to perform a critical activity alone. That is not only the learner's proficiency in the task, but also the nature of the task, the experience and trust propensity of the supervisor, the context in which the activity is being done and the relationship of the learner with the supervisor.<sup>22</sup>

Summative entrustment decisions imply important privileges for the autonomy of learners, not just limited to one situation or context, but more generalized. Like a license to practice across a broad domain of professional practice, summative entrustment decisions for EPAs can be regarded to lead to a mini-license to practice for a particular EPA, under specified level of supervision. These decisions are therefore important. They operationalize competency-based education. The validity of such decisions should be supported as much as possible.

There is a clear parallel with programmatic assessment. Norcini, when proposing to replace end-of-rotation clinical exams by series of mini-clinical evaluation exercises (miniCEX) to increase the reliability of summative decisions,<sup>23,24</sup> started a movement that is now better known as programmatic assessment.<sup>25</sup> The, arguably, most important feature of programmatic assessment is that important decisions on learner progress should not be based on single data points. In parallel, summative entrustment decisions should not be made on single observations and by individual educators but by teams, based on multiple data points. In the postgraduate Canadian context these teams are called Competence Committees. Their decisions are even more critical as they directly affect patient care and not just learner progress.<sup>26,27</sup>

The task of these teams is to process and weigh all available information. A learner's portfolio should contain the results of observations and evaluations, e.g. after ad hoc entrustment decisions, brief observations, multi-source feedback, case-discussions, product information, and any other relevant workplace-based assessment data.<sup>28</sup> Being aware of factors including context, supervisor, tasks,

<sup>i</sup> The English language does not have an optimally suitable single word for the materialization of a summative entrustment decision. STAR (statement of awarded responsibility) is an expression that has been used; the Dutch language uses 'bekwaamverklaring' – which would translate as 'attestation of competence'.

<sup>ii</sup> Note that this is at variance with the O-SCORE (or OCAT) scale most often used in Canada.<sup>44,45</sup>

relationships, a deliberate agreement, primarily based on learner features should guide summative decisions of entrustment. Agreement can include intersubjective judgment, based on varying subjective expert judgments.<sup>29–31</sup> That judgment should take into account general learner features that are important for entrustment,<sup>32</sup> including integrity, humility, agency, and reliability, as we have elaborated elsewhere,<sup>33</sup> and prerequisites lower levels of Miller's Pyramid if that information is available. Finally, true entrustment includes an estimation of adaptive competence, i.e. an ability to cope with unfamiliar situations. *Trust* in this capability may be regarded as an extension of Miller's Pyramid, beyond the 'Does' level.<sup>27</sup>

With the advent of technology, including mobile devices to capture ad hoc information and e-portfolios to synthesize and visualize data, the efficiency of such decisions can increase.

## Licensing and certification supported by EPAs and entrustment decisions

A medical license permits a person to legally practice medicine. Most nations require such a license, bestowed by a government-approved professional association or agency. A medical school graduate must receive a license to practice medicine to legitimately be called a physician. The process often requires testing by a medical board (as is the case in Canada). The medical license is the documentation of authority to practice medicine within a certain locality. Specialty certification is usually not a legislative process but a quality procedure, often including exams, leading to formal registration, a condition for the practice of medicine in that specialty. The purpose of licensing is to protect the public against substandard health care, and the nature of licensing is that licensed physicians are allowed to practice medicine, but *bounded by their competence*.<sup>iii</sup> Specialty certification attests of this bounded competence.

However, there is a potential problem of oversight. License and certification decisions are necessarily based on limited information. Declaring ready for practice is in fact a big *entrustment decision* implying that a program director, committee, institution, or specialty board expresses trust that the individual will meet quality standards across the

breadth of the license and/or specialty. In practice, such decisions are too comprehensive to oversee.

Here is where EPAs can play a role. By defining smaller units of practice, each of these can receive a greater level of confidence of being met than the license or certification as a whole. If EPAs constitute a portfolio of qualifications, it should be determined who has access, i.e. who should be able to verify what the units of practice are for which the physician is qualified? A license can then be defined as the required combination of EPAs for which one is qualified. These units of practice should therefore be carefully defined in a way that not only serves education but also can determine the physician's scope of practice. The average number of core EPAs per program, across all national specialty programs in The Netherlands, is about 15.<sup>34</sup> These may be supplemented with subspecialty EPAs, but the total number should arguably be not larger than 20 to 30.

This line of reasoning leads to the definition of a licensed practitioner by the EPAs for which one is qualified and can allow for differences between individuals and within individuals across time periods from education through retirement. For instance, a dermatologist may be qualified for the breadth the specialty, without dermatological surgery. In contrast, a general surgeon may be qualified for all EPAs of general surgery, but may have added screening colonoscopy as an EPA.<sup>35</sup> In other words the competence of a specialist may be much more precisely defined if framed in EPAs, and the portfolio of EPAs may be dynamic in the sense that EPAs may have been mastered usually during training. But some expected EPAs may never be attained, others may have been dropped after extensive periods of non-practice or still others added after training as needed or desired by a practitioner, after adequate training.<sup>36</sup>

## Supervision as a key component of certified responsibilities

Variation in the level of qualification for tasks in health care is related to licensing and privileging. Clearly, recently graduated medical students cannot work at the same level of responsibility as residents, or fellows, or experienced practitioners. The key variable is the required supervision. Required level-of-supervision (LOS) is the outcome of entrustment decisions. The most generic scale has five LOS: (1) permission to be present and observe, (2) permission to act with direct supervision (3) permission to act with

<sup>iii</sup> This expression is derived from the Dutch legislation but is likely to be valid for many countries

indirect supervision, (4) permission to act unsupervised or with clinical or managerial oversight only and (5) permission to act as a supervisor. These levels can be applied to individual EPAs. While “licensing” suggests a “level 4” permission, in practice, at the time of the medical license the medical doctors will have permission to act under indirect (or even direct) supervision (i.e. level 3 or 2) for most EPAs. A “prospective” ES scale, that defines a level of supervision for an EPA that an individual will require<sup>21</sup> is a useful outcome scale to qualify an individual’s level of autonomy. This can provide a matrix that, at any time, gives insight in a physician’s acknowledged competence (Table 1).

## A dynamic portfolio of EPAs, to reflect the scope of practice of a licensed physician

From the moment of licensing, physicians have medical privileges and can be held liable for their medical conduct. From that moment on the physician’s scope of permitted practice can be defined as EPAs. EPAs that have been identified for medical students<sup>37,38</sup> are not the best framework for this purpose, because they are not meant to reflect the unsupervised practice of a practitioner. In most cases they are too small or too general and will be ‘nested’ within the broader EPAs that serve to qualify residents for autonomous practice. EPAs that reflect true unsupervised practice are relevant in the graduate education space, for which EPAs were originally conceived.<sup>5,11,39</sup> Theoretically, all EPAs of all residency programs taken together could be listed, which would make a long list or probably a few hundred EPAs (see Table 1 in reference<sup>34</sup>). Many of these EPAs would not be relevant for a particular resident, fellow or specialist. But it would be conceivable that, for each of these EPAs, any given individual, at any time, could be marked to be qualified to practice unsupervised, or with indirect or direct supervision, or not at all. That ‘snapshot’ could change over time and reflect the development of the individual, both in their competence and in their privileges to practice.

Table 1 shows what such a dynamic portfolio of EPAs, and what a developing scope of practice might look like. EPAs A through K reflect the core activities for all residents in a particular postgraduate specialty training program. EPAs L through O reflect EPAs outside the core set of EPAs for this residency, most of which would belong to different specialties. As an early career attending physician, the

individual would be certified to practice most of what was learned. EPA K, which is quite remote for the subspecialty, is no longer practiced. If so desired, this physician would require a phase of direct (close) supervision to pick up this practice. For EPA H, the resident never reached the required level of competence to practice unsupervised. Yet, the overall specialty certification has been granted. For this EPA then, it would remain a requirement to work in a team in which at least one colleague specialist should be present who is fully certified for EPA H. However, our physician did develop an interest in a neighboring domain and is being trained in EPAs L and M. A decade later (the third column), the physician has given up practicing EPA G (would need some supervision to start doing this again) and EPA J and K (would need close supervision if ever practiced again). However, the physician has become quite skilled in EPAs L, M and N and is becoming skillful in EPA O. In addition, the physicians has added an EPA to her portfolio from a very remote specialty (EPA Z) which quite distinguishes her from all or most of her colleagues. She practices that one half day per week.

Table 1. A fictitious portfolio of EPAs of the same physician at different career stages

Level of autonomy	Physician in residency training			Early career attending physician			Mid career attending physician		
	2	3	4	2	3	4	2	3	4
EPA A	x					x			x
EPA B	x					x			x
EPA C		x				x			x
EPA D		x				x			x
EPA E		x				x			x
EPA F			x			x			x
EPA G			x			x		x	
EPA H		x			x				x
EPA I			x			x			x
EPA J			x			x	x		
EPA K		x		x			x		
EPA L					x				x
EPA M					x				x
EPA N									x
EPA O								x	
Et cetera									
EPA Z									x

The numbers refer to level of entrustment and required supervision.

The significance of EPAs after licensing and certification, i.e. after formal training, becomes clear and transparent in this model. It is a domain of current study and acknowledges the potential need for supervision after formal training.<sup>40,41</sup> The model also shows what continuous professional development can look like and how the highest levels of

mastery are not attained directly after training, licensing and certification.

The idea of certification for EPAs, i.e. for units of practice, is not new. Recently, Norcini has advocated that we reshape medical education, to cope with an ever growing body of knowledge of diseases, procedures, and therapies and to offer regulations for practitioners who desire to acquire additional skills. He proposes micro-credentialing to realize this.<sup>42</sup> Micro-credentialing and digital badges might indeed become an adequate option to define one's scope of practice and operationalize the idea of a dynamic portfolio of EPAs.<sup>36</sup>

## Limitations and strengths of EPAs, and work ahead

Finally, a note about the comprehensiveness of entrustable professional activities. EPAs are not a panacea, nor necessarily the best or only method to organize medical education or to ground licensing.

Some qualities of physicians are not easily captured in the concrete tasks that EPAs are.<sup>6</sup> Attitudinal qualities such as professionalism, but also broad behavioral features as interprofessional collaboration may better not be translated in specific EPAs.<sup>43</sup> Qualities or competencies that are highly general, pervasive, and important in health care are often applicable across many EPAs and do not need to be translated to specific EPAs.

However, thinking in terms of EPAs is useful to operationalize competency-based medical education and, more importantly, to operationalize competence-based medical practice and therefore constitute a suitable mechanism to support licensing. Using EPAs to restructure licensing, certification and maintenance of competence for the "highest quality of care" will require a large effort that involves many stakeholders, but may potentially create a better guarantee that practitioners meet the standards that are needed.

**Conflicts of Interest:** None

**Funding:** None

## References

1. Shorey S, Lau TC, Lau ST, Ang E. Entrustable professional activities in health care education: a scoping review. *Med Educ.* 2019;53(8):766-777. <https://doi.org/10.1111/medu.13879>
2. O'Dowd E, Lydon S, O'Connor P, Madden C, Byrne D. A systematic review of 7 years of research on entrustable professional activities in graduate medical education, 2011–2018. *Med Educ.* 2019;53(3):234-249. <https://doi.org/10.1111/medu.13792>
3. Meyer EG, Chen HC, Uijtdehaage S, Durning SJ, Maggio LA. Scoping review of entrustable professional activities in undergraduate medical education. *Acad Med.* 2019;94(7):1040-1049. <https://doi.org/10.1097/ACM.0000000000002735>
4. Bramley A, McKenna L. Entrustable professional activities in entry-level health professional education: A scoping review. *Med Educ.* 2021;(Prepubl):0-3. <https://doi.org/10.1111/medu.14539>
5. ten Cate O. Entrustability of professional activities and competency-based training. *Med Educ.* 2005;39(12):1176-1177. <https://doi.org/10.1111/j.1365-2929.2005.02341.x>
6. Ten Cate O, Taylor DR. The recommended description of an entrustable professional activity: AMEE Guide No. 140. *Med Teach.* 2021;43(10):1106-1114. <https://doi.org/10.1080/0142159X.2020.1838465>
7. NN. *Lexico.* <https://www.lexico.com/definition/Competence>.
8. NN. Merriam-Webster Dictionary.
9. Oxford English Dictionary. Oxford University Press. <https://www.oed.com>.
10. ten Cate O. Medical Education, Competency-Based. In: Cockerham WC, Dingwall R, Quah SR, eds. *The Wiley Blackwell Encyclopedia of health, illness, behavior, and society.* Hoboken, NJ, USA: John Wiley & Sons, Ltd.; 2014:1329-1335. <https://doi.org/10.1002/9781118410868.wbehibs331>
11. ten Cate O, Scheele F. Viewpoint: competency-based postgraduate training: can we bridge the gap between theory and clinical practice? *Acad Med.* 2007;82(6):542-547. <https://doi.org/10.1097/ACM.0b013e31805559c7>
12. McGaghie WC, Miller GE, Sajid AW, Telder TW. *Competency-Based Curriculum Development in Medical Education - an Introduction.*; World Health Organization, 1978.
13. ten Cate O, Billett S. Competency-based medical education: origins, perspectives and potentialities. *Med Educ.* 2014;48(3):325-332. <https://doi.org/10.1111/medu.12355>
14. Teunissen PW, Watling C, Schrewe B, et al. Contextual Competence: how residents develop competent performance in new settings. *Med Educ.* 2021;55:1100-1109. <https://doi.org/10.1111/medu.14517>
15. ten Cate O. Entrustment as Assessment: Recognizing the Ability, the Right, and the Duty to Act. *J Grad Med Educ.* 2016;8(2):261-262. <https://doi.org/10.4300/JGME-D-16-00097.1>
16. Jonker G, Ochtman A, Marty AP, Kalkman CJ, Ten Cate O, Hoff RG. Would you trust your loved ones to this trainee? Certification decisions in postgraduate anaesthesia training. *Br J Anaesth.* 2020;125(5):E408-E410. <https://doi.org/10.1016/j.bja.2020.07.009>
17. Mattar SG, Alseidi AA, Jones DB, et al. General surgery residency inadequately prepares trainees for fellowship: Results of a survey of fellowship program directors. *Ann Surg.* 2013;258(3):440-447. <https://doi.org/10.1097/SLA.0b013e3182a191ca>
18. George BC, Bohnen JD, Williams RG, et al. Readiness of US General Surgery Residents for Independent Practice. *Ann Surg.*

- 2017;266(4):582-594.  
<https://doi.org/10.1097/SLA.0000000000002414>
19. Halpern SD, Detsky AS. Graded autonomy in medical education--managing things that go bump in the night. *N Engl J Med*. 2014;370(12):1086-1089.  
<https://doi.org/10.1056/NEJMp1315408>
  20. ten Cate O, Hart D, Ankel F, et al. Entrustment decision making in clinical training. *Acad Med*. 2016;91(2):191-198.  
<https://doi.org/10.1097/ACM.0000000000001044>
  21. ten Cate O, Schwartz A, Chen HC. *Assessing trainees and making entrustment decisions*. Vol Publish Ah.; 2020.  
<https://doi.org/10.1097/acm.0000000000003427>
  22. Hauer KE, ten Cate O, Boscardin C, Irby DM, Iobst W, O'Sullivan PS. Understanding trust as an essential element of trainee supervision and learning in the workplace. *Adv Heal Sci Educ*. July 2013. <https://doi.org/10.1007/s10459-013-9474-4>
  23. Norcini J, Blank L, Arnold G, Kimball H. The Mini-CEX (clinical evaluation exercise): a preliminary investigation. *Ann Intern Med*. 1995;123(10):795-799. <https://doi.org/10.7326/0003-4819-123-10-199511150-00008>
  24. Norcini JJ, Blank LL, Duffy FD, Fortna GS. The Mini-CEX : a method for assessing clinical skills. *Ann Intern Med*. 2003;138:476-481. <https://doi.org/10.7326/0003-4819-138-6-200303180-00012>
  25. Van Der Vleuten CPM, Schuwirth LWT, Driessen EW, et al. A model for programmatic assessment fit for purpose. *Med Teach*. 2012;34(3):205-214.  
<https://doi.org/10.3109/0142159X.2012.652239>
  26. ten Cate O. Entrustment decisions: bringing the patient into the assessment equation. *Acad Med*. 2017;92(6):736-738.  
<https://doi.org/10.1097/ACM.0000000000001623>
  27. Ten Cate O, Carraccio C, Damodaran A, et al. Entrustment decision making: extending Miller's Pyramid. *Acad Med*. 2021;96(2):199-204.  
<https://doi.org/10.1097/ACM.0000000000003800>
  28. Ten Cate O, Chen HC, Hoff RG, Peters H, Bok H, Van Der Schaaf M. Curriculum development for the workplace using entrustable professional activities (EPAs): AMEE guide no. 99. *Med Teach*. 2015;37(11).  
<https://doi.org/10.3109/0142159X.2015.1060308>
  29. Touchie C, Kinnear B, Schumacher D, et al. On the validity of summative entrustment decisions. *Med Teach*. 2021;(EarlyOnline).  
<https://doi.org/10.1080/0142159X.2021.1925642>
  30. Hauer KE, Edgar L, Hogan SO, Kinnear B, Warm E. The science of effective group process: lessons for clinical competency committees. *J Grad Med Educ*. 2021;(April):S59-S64.  
<https://doi.org/10.4300/JGME-D-20-00827.1>
  31. Smit MP, de Hoog M, Brackel HJL, ten Cate O, Gemke RJB. A national process to enhance the validity of entrustment decisions for Dutch pediatric residents. *J Grad Med Educ*. 2019;11(4s):158-164. <https://doi.org/10.4300/jgme-d-18-01006>
  32. Kennedy TJT, Regehr G, Baker GR, Lingard L. Point-of-care assessment of medical trainee competence for independent clinical work. *Acad Med*. 2008;83(Supplement):S89-S92.  
<https://doi.org/10.1097/ACM.0b013e318183c8b7>
  33. ten Cate O, Chen HC. The ingredients of a rich entrustment decision. *Med Teach*. 2020;42(12):1413-1420.  
<https://doi.org/10.1080/0142159X.2020.1817348>
  34. de Graaf J, Bolk M, Dijkstra A, van der Horst M, Hoff RG, ten Cate O. The implementation of entrustable professional activities in postgraduate medical education in the Netherlands: rationale, process, and current status. *Acad Med*. 2021;96(7S):S29-S35.  
<https://doi.org/10.1097/acm.0000000000004110>
  35. Wells K, Fleshman J. Screening Colonoscopy Should Be Available to All. *JAMA Surg*. 2019;154(7):636.  
<https://doi.org/10.1136/jcp.2010.075507>
  36. ten Cate O, Carraccio C. Envisioning a true continuum of competency-based medical education, training and practice. *Acad Med*. 2019;94(9):1283-1288.  
<https://doi.org/10.1097/ACM.0000000000002687>
  37. Englander R, Flynn T, Call S, et al. toward defining the foundation of the md degree: core entrustable professional activities for entering residency. *Acad Med*. 2016;91(10):1352-1358. <https://doi.org/10.1097/ACM.0000000000001204>
  38. ten Cate O, Graafmans L, Posthumus I, Welink L, van Dijk M. The EPA-based Utrecht undergraduate clinical curriculum: development and implementation. *Med Teach*. 2018;40(5):506-513.  
<https://doi.org/10.1080/0142159X.2018.1435856>
  39. Ten Cate O. Trust, competence, and the supervisor's role in postgraduate training. *Br Med J*. 2006;333(7571).  
<https://doi.org/10.1136/bmj.38938.407569.94>
  40. Duijn C, Bok H, Ten Cate O, Kremer W. Qualified but not yet fully competent: Perceptions of recent veterinary graduates on their day-one skills. *Vet Rec*. 2020;186(7).  
<https://doi.org/10.1136/vr.105329>
  41. de Raad T, Wiersma F, Kuilman L, ten Cate O. The fate of EPAs after graduation. A survey study among graduated physician assistants. (forthcoming).
  42. Norcini J. Is it time for a new model of education in the health professions? *Med Educ*. 2020;54(8):687-690.  
<https://doi.org/10.1111/medu.14036>
  43. ten Cate O, Pool IA. The viability of interprofessional entrustable professional activities. *Adv Heal Sci Educ*. 2020;25(5). <https://doi.org/10.1007/s10459-019-09950-0>