Introduction of Competence by Design to Canadian Nephrology Postgraduate Training

Maury Pinsk¹, Jolanta Karpinski², and Euan Carlisle³; on behalf of the Royal College Specialty Committee in Nephrology and workshop participants

Abstract

Purpose of the review: The Royal College of Physicians and Surgeons of Canada, with its Competence by Design initiative, is adopting the principles of competency-based medical education for residency training and continuing professional development. This initiative is being undertaken to meet the new standards of medical education in Canada, which include social accountability to meet performance-based outcomes of training. Nephrology is poised to implement Competence by Design into residency training in July 2018 and initiate a continuous quality improvement cycle to periodically renew and update the training requirements to be socially accountable and relevant in the modern age of medicine. The purpose of this review is to describe the process of entrustable professional activity and required training experience development and how they will affect subspecialty training in Canada.

Sources of information: The construct of competency-based medical education was derived from existing literature searches of the medical education literature, including documentation provided by the Royal College of Physicians and Surgeons of Canada. The content for each entrustable professional activity and milestone was derived by consensus from the community expertise of the working group, existing specialty training requirements, and elements of training requirements that the Royal College has been mandated to superimpose on all training requirements to meet societal expectations.

Methods: The Royal College Specialty Committee in Nephrology participated in 2 years of preparation for this implementation, which has included the creation of a new educational design for the discipline and the elucidation of entrustable professional activities to describe the scope of nephrology practice and to guide teaching, learning, and assessment in residency, and ultimately maintenance of competence in practice.

Key findings: This article introduces the set of entrustable professional activities for adult and pediatric nephrology and describes the national consultation as part of an ongoing quality improvement of this work.

Limitations: The implementation of Competence by Design will be tested by whether trainees embrace competency-based education by training to just entrustable professional activities, rather than the holistic model idealized in physician training. This is mitigated by the entrustable professional activity development incorporating multiple layers of competencies beyond a procedural skill. Time commitment for faculty will pose additional challenges in increasing the time for assessment of trainees, but is supported by electronic platforms at the Royal College to assist in data gathering and analysis.

Implications: Competence by Design in nephrology is an outcomes-based curriculum and assessment platform that aims to train nephrologists to meet societal expectations in an ever-changing and complicated health care system. The goals are to increase safety and professional accountability to society and improve upon the already high standards of training within Canada.

Abridged

Contexte motivant la revue: Le Collège royal des médecins et des chirurgiens du Canada, avec son initiative intitulée « La compétence par conception » (CPC), adopte les principes de l’approche par compétences en formation médicale pour la formation des résidents et le perfectionnement professionnel continu. Cette initiative est entreprise pour répondre aux nouvelles normes en matière de formation médicale au Canada, qui comprennent notamment la responsabilité envers la société, pour atteindre des résultats de formation axés sur le rendement. La néphrologie fait partie des spécialités médicales qui adopteront dès juillet 2018 la CPC pour la formation de leurs résidents. La discipline amorce ainsi un cycle d’amélioration continue de la qualité qui participera à mettre à jour et à renouveler sur une base régulière les exigences de formation, de
façon à demeurer pertinente et socialement responsable à l’ère de la médecine moderne. L’objectif de la présente revue est de présenter le processus régissant les activités professionnelles confiées (APC) et l’acquisition des expériences de formation exigées, et de décrire la manière dont il influencera la formation dans les sous-spécialités au Canada.

**Sources:** L’élaboration de l’approche par compétences en formation médicale dérive de recherches dans la littérature existante au sujet de la formation médicale, notamment de documents fournis par le Collège royal des médecins et des chirurgiens du Canada. Le contenu de chacun des jalons et des APC a été établi par consensus à partir : i) de l’expérience communautaire des membres du groupe de travail; ii) des exigences actuelles en matière de formation spécialisée, et; iii) d’éléments d’exigences de formation que l’on a demandé au Collège royal de superposer aux précédentes, afin de répondre aux attentes de la société envers la profession.

**Méthodologie:** Le comité de spécialité en néphrologie du Collège royal a participé à deux années de préparation pour la mise en œuvre du programme. Le comité devait dans un premier temps créer un nouveau modèle de formation pour la discipline. Ensuite, le comité était chargé de clarifier les APC couvrant tous les champs d’application de la pratique en néphrologie, et qui guideront l’enseignement fait aux résidents, leur apprentissage, leur évaluation et le maintien de la compétence dans la pratique.

**Principaux résultats:** Cet article fait la description de l’ensemble des APC propres à la néphrologie adulte et pédiatrique, et présente la consultation nationale dans le cadre d’un processus d’amélioration continue de la qualité pour la discipline.

**Limites:** Le succès de la mise en œuvre de la CPC sera mesuré selon que les stagiaires adopteront l’approche par compétences pour leur formation, soit en se concentrant uniquement sur la maîtrise des APC, plutôt que le modèle holistique idéalisé dans la formation des médecins. Cette situation est atténuée par l’élaboration d’APC intégrant de multiples niveaux de compétences qui vont au-delà des habiletés techniques. Le temps supplémentaire requis pour l’évaluation des stagiaires posera un défi au corps professoral. Les enseignants cliniques pourront toutefois compter sur les plateformes électroniques du Collège royal pour faciliter la collecte et l’analyse des données.

**Conclusion:** La CPC en néphrologie consiste en un parcours axé sur les résultats et une plateforme d’évaluation des compétences. Elle aspire à former des néphrologues aptes à répondre aux attentes de la société envers la discipline, et ce, dans un système de santé complexe et en constante évolution. Ses objectifs visent à accroître la sécurité et la responsabilité professionnelle envers la société, et à renforcer les normes déjà très élevées en matière de formation médicale au Canada.

**Keywords**
Competence by Design, competency-based medical education, CBME, nephrology training

Received January 28, 2018. Accepted for publication June 10, 2018.

**What was known before**
Post graduate training in Canada for Nephrology and Pediatric Nephrology has maintained a high standard of education. Despite these high standards, the process is uniformly time-based training and did not explicitly address the changing complexity or societal needs in adult and pediatric renal care.

**What this adds**
Competence by Design incorporates the core competencies required to train renal specialists based on needs identified of the Canadian health care system. This article reviews the process of consultation used to develop new standards of training and describes the standards that will be employed starting July 2018 in Canadian Nephrology and Pediatric Nephrology post graduate training programs.

**Current Training Practices in Canada**
In Canada, completion of undergraduate medical school education confers a medical degree and leads to graduate training in family medicine (2 years) or one of 65 medical, surgical, or diagnostic specialties or subspecialties (4-6 years depending on the discipline). This residency training occurs under the governance of the College of Family Physician of Canada (for family medicine) or the Royal College of Physicians and Surgeons of Canada (for specialty and subspecialty training) in partnership with Canada’s 17 Faculties of Medicine. As an example, certification in the subspecialty of nephrology requires completion of medical school, 3 years of the

---

1. Department of Paediatrics and Child Health, University of Manitoba, Winnipeg, MB, Canada
2. Royal College of Physicians and Surgeons of Canada, Ottawa, ON, Canada
3. Department of Medicine, McMaster University, Hamilton, ON, Canada

**Corresponding Author:**
Maury Pinsk, University of Manitoba, Section of Pediatric Nephrology, FE009, 840 Sherbrook Street, Winnipeg, MB, Canada R3A 1S1.
Email: mpinsk@exchange.hsc.mb.ca
internal medicine or pediatric specialty residency, and 2 years of adult or pediatric nephrology subspecialty residency, with success in the certification exam of each discipline. These governing bodies have established goals, objectives, and requirements for residency training, rigorous assessment processes with national standardized examinations, as well as robust accreditation standards and processes to ensure a high-quality educational standard and outcome.

**Overview of Competence by Design**

Competency-based medical education (CBME) is an outcome-based approach to physician development that has been proposed to address the need for better accountability and outcomes in medicine.\(^1\)\(^2\)

The Competence by Design (CBD)\(^3\) initiative adapts the principles and core components of CBME to our unique Canadian context (Table 1).\(^4\) In CBD, the required competencies are identified based on the needs of the Canadian health care system and articulated using the Canadian standards for medical training, the CanMEDS roles.\(^5\) Stages of training (Figure 1)\(^6\) explicitly describe the sequence of learning experiences and expectations, the transition from medical school to residency, and the progression of a resident’s abilities over time ultimately from residency into practice. Entrustable professional activities (EPAs)\(^7\) are tasks of the discipline appropriate to the stage of training. Entrustable professional activities focus on the supervisor/resident interactions in the clinical environment and facilitate clinical teaching, observation, and coaching of resident performance. Diverse methods of assessment are selected, each purposefully chosen for their alignment with desired outcomes. These are implemented as a program of assessment, with individual data points providing feedback to the learner and aggregated data points used to make decisions about progress and promotion.\(^8\)

---

**Table 1. Core Components of Competency-Based Medical Education.**

| Competencies are clearly articulated |
|-------------------------------------|
| Competencies are arranged progressively |
| Learning experiences facilitate the progressive development of competencies |
| Teaching practices promote the progressive development of competencies |
| Assessment practices support and document the progressive development of competencies |

---

**Figure 1.** The CBD competence continuum.  
*Note. CBD = Competence by Design.*

---

\(^1\) Pinski et al. \(^2\) Pinski et al. \(^3\) Competence by Design (CBD) \(^4\) Competence by Design (CBD) \(^5\) CanMEDS 2015 \(^6\) Core of discipline \(^7\) Foundations of discipline \(^8\) Transition to discipline (orientation and assessment)
This competency-based, outcome-oriented, learning and assessment strategy involves all specialties, subspecialties, and special programs recognized by the Royal College across the continuum of residency training and practice. The CBD begins with residency education, with a small number of disciplines implementing the change each year over the coming 6-8 years. Nephrology adult and pediatric programs are expected to implement CBD for the cohort beginning residency in July 2018. CBD will, in the future, be applied to the continuing medical education phase of physician development and maintenance of competence.

Justification for Moving to CBD

The impetus for the change to a CBD model is born out of three issues that shape medical education. First, medical practice in Canada is changing, and so the training necessary to work in Canada must change as well. Although medicine has become increasingly complex in terms of the procedures that are performed, the diagnostic technologies that are employed, and the therapies that are available, has allowed the teaching of medicine to lag behind. Our trainees need to be equipped with the abilities to evaluate new treatment options, both current and in development, incorporate new diagnostic methods that refine our understanding of disease, and manage resources including the availability of therapeutic that financially weigh heavily on the health care system.9 Second, we are seeing more graduates enter a community-based practice where the skills required may differ from those of teaching centers which are supported by multiple consultative and diagnostic departments not as readily available in community-based practices. The training we currently offer leaves gaps for those entering nonacademic practice and how we train physicians’ needs to address the gaps, ensuring autonomy and providing flexibility for each trainee's career prospects.10 Finally, society is expecting greater accountability for our actions as health care providers and to train physicians to avoid unsafe practices and meet a minimum standard of competence.2,11 We have a responsibility to ensure that graduates of our training programs are prepared to meet the standards set out by societal norms, including cultural competence, safety, leadership, and professional development.

CBD addresses these needs through 3 components. First, in moving to CBD, medicine is establishing clear outcomes that include the required skill sets, attitudes, and knowledge a physician must possess. Second, these outcomes are based on societal needs and expectations of physician behaviors and skills, and specifically, the expectations of available care a nephrologist should provide. And finally, these societal expectations are met by demonstrating that physician training incorporates specific outcomes into the design of teaching, learning, and assessment and that these outcomes are used to assist physicians to maintain the standards of care throughout a medical career.

Overview of the Education Design Process in Nephrology

The Royal College of Physicians and Surgeons of Canada is the regulatory body credentialing specialty and subspecialty training in Canada. The mandate of the Royal College is to ensure that training in specialties and subspecialties follows the common language of the CanMEDS framework and holds all training programs to common guidelines for accreditation. The Subspecialty Committee in Nephrology is the designated committee that oversees the standards of training and assessment in nephrology (adult and pediatric). It comprises training program directors from each accredited Canadian program and nephrology examination board chairs, in addition to regional representatives and members of the national specialty society (The Canadian Society of Nephrology) who are all practicing nephrologists in Canada. The committee, and invited guests (including Chairs of Specialty Committees in Pediatrics and Internal Medicine, and current postgraduate trainees in nephrology), began work on the CBD initiative in 2016. Supported by a Royal College clinician educator, a writer, and an administrative assistant, the group worked together over the course of 3 multiday workshops and numerous tele- and web-conferences to develop a new subspecialty education design consistent with the principles of CBD. The group achieved consensus in describing the scope of nephrology practice in Canada and the stages of residency training in the subspecialty. Careful consideration was given to “what do we want trainees to know” coming into nephrology training, which formed the basis for the Transition to Discipline phase. Similarly, items that were essential for trainees to understand as they left training and begin practice formed the basis for the Transition to Practice phase. Foundations and Core phases were developed from the essential competencies delineated in the discussion. Through an iterative process, smaller groups of participants were tasked with the initial draft of EPAs and required training experiences, which were then subjected to a review by other small groups who further refined the concepts and training requirements. Finally, the EPAs and training experiences were brought back to the larger group for discussion and further refinement. Assessment strategies were selected to provide opportunities for observation and coaching in the performance of these EPAs, as well as opportunities to document the resident’s acquisition of competence. The placement of the overall EPAs within the training sequence was examined and further modifications were made. Gaps that were identified or errors of omission were brought back to the group at subsequent workshops, until the list of contentious EPAs and training experiences were discussed and consensus achieved on the goals of training. Finally, all these components were recorded as the new standards of training in nephrology, approved by the Royal College Specialty Standards Review Committee, and prepared for dissemination and implementation.
In writing EPAs, professional activities of the discipline are identified through an analysis of the daily work of the physician. The concept of entrustment, a judgment made by supervisors when deciding whether a trainee may assume the responsibility to perform that professional activity, is used to identify the stage of training in which the EPA would be achieved. The sum total of the EPAs should represent the sentinel professional work of the discipline—the scope of practice of nephrology.

**Nephrology’s EPAs**

The EPAs of nephrology (Table 2) and pediatric nephrology (Table 3) reinforce the shared basis of the adult and pediatric streams; the majority of the EPAs are the same, albeit with some important differences (see Adult Foundations 11, or Core 6). The EPAs demonstrate the progression of responsibility throughout residency: Foundations focuses on common and/or urgent presentations; Core adds complexity and the full range of patient care, as well as activities beyond the individual patient/physician interaction; and Transition to Practice integrates all these activities into a holistic practice. The set of EPAs is meant to describe the work of a physician.
practicing in the full breadth of nephrology, recognizing that many of us further refine some areas of practice and may narrow our scope based on individual preference and/or local circumstances and resources.

**Bringing EPAs Into the Teaching Environment**

The EPA design was an exercise for the subspecialty committee defining what it means to practice nephrology and pediatric nephrology in Canada. Entrustable professional activities represent specific, real-world tasks or skill sets that define the specialty; each EPA comprises milestones, which are more discrete aspects of the skill set. For example, the EPA “Establishing a comprehensive treatment plan for patients with AKI” includes the milestone of being able to “assess the indications for renal replacement therapy and modality” (Table 4). As such, they help focus the evaluator on a specific scope of work at each encounter, targeting feedback to a specific skill acquisition and simplifying the evaluation to whether the learner still is working on developing the skill, whether they are developing the skill but still require some refinement, or whether the learner could be completely entrusted to perform that skill independently. The latter assessment is an indication of mastery of the milestone and an indication that the learner can be promoted through the phases of training. However, the decision to promote a learner is no longer triggered by the lone assessor. A key

**Table 3. Pediatric Nephrology EPAs.**

| Transition to Discipline                              |
|-------------------------------------------------------|
| 1. Assessing patients with known kidney disease, identifying the unique concerns seen in nephrology patients |
| 2. Recognizing nephrology-specific emergencies/urgencies, demonstrating insight as to own limitations and knowing when to seek appropriate help |

| Foundations                                           |
|-------------------------------------------------------|
| 1. Assessing and providing an initial management plan for patients with AKI |
| 2. Assessing and providing an initial plan for investigation and management of patients with CKD |
| 3. Assessing and providing an initial plan for investigation and management of patients with hematuria and/or proteinuria |

| Core                                                  |
|-------------------------------------------------------|
| 1. Establishing a comprehensive treatment plan for patients with AKI |
| 2. Ordering and adjusting prescriptions for patients with AKI and other acute/urgent indications for renal replacement therapy |
| 3. Assessing and treating patients with difficult-to-control or suspected secondary hypertension |

| Transition to Practice                                |
|-------------------------------------------------------|
| 1. Managing new renal transplant recipients with a complex postoperative course |
| 2. Managing the multidimensional aspects of nephrology practice |

© 2018 The Royal College of Physicians and Surgeons of Canada. All rights reserved.

Note. EPAs = Entrustable Professional Activities; AKI = acute kidney injury; CKD = chronic kidney disease; ESRD = end-stage renal disease; PD = peritoneal dialysis; HD = hemodialysis.
component of CBD is the use of a competence committee, a
group that synthesizes and integrates all of the data sources
to assess whether skills around a specific milestone or EPA
have been sufficiently demonstrated for promotion or
whether further training around that skill is warranted. While
there is no question there is more assessment occurring in
CBD, the type of assessment is efficient, intuitive to the prac-
tice of medicine, and tailored specifically to the assessment
of each EPA.13

**Continuous Quality Improvement of the Nephrology Training Requirements**

Completion of the EPA and milestone documents is a rede-
sign of training requirements for adult and pediatric streams
of nephrology. These documents are now approved by the
Royal College of Physicians and Surgeons of Canada for
implementation in the July 2018 roll-out of CBD in nephrol-
ogy subspecialties. As such, any program undergoing an
accreditation review after July 2018 will be held to the new
documents and standards.

In the process of modernizing the training requirements,
including accounting for trends in practice changes across
the country, the CBD working group felt that the
now-approved documents require a periodic secondary
review by the nephrology community, particularly the com-
community-based physicians. This is to ensure that academic
institutions are implementing training standards that meet
the needs of the broader clinical community.

The document suite was therefore circulated to the
national specialty societies for pediatric and adult nephrol-
ogy for broader consultation. The specialty societies were
asked to consider specific questions:

1. Do the current EPAs and milestones describe the practice of nephrology and define training that creates an employable nephrologist in Canada? If not, what tasks or skills have been overlooked or mini-
mized, and what tasks or skills have been embedded in the documents that do not reflect current clinical and academic practice?

2. Do the current required training experiences provide adequate exposure to a comprehensive training in nephrology? If not, what is missing and/or what is overemphasized?

3. Is the number of EPAs, milestones, and training experiences feasible in the context of providing sufficient clinical structures and assessment of

---

**Table 4. Nephrology: Foundations EPA 1 (Adult and Pediatric): Assessing and Providing an Initial Management Plan for Patients With AKI.**

| Key features                                                                 |
|------------------------------------------------------------------------------|
| This EPA focuses on the initial diagnostic approach to patients with AKI as well as initial orders for treatment of complications, fluid, electrolyte and nutritional management, and adjustment of medications. |
| This EPA includes recognizing those patients who require renal replacement therapy and selection of appropriate modality, but does not include the prescription or monitoring of renal replacement therapy. |
| This EPA may be observed in patients with any etiology of AKI, in any clinical setting. |

| Relevant milestones                                                          |
|------------------------------------------------------------------------------|
| ME 2.2 Perform focused clinical assessments                                  |
| ME 2.2 Ascertain volume status                                                 |
| ME 2.2 Ascertain indications for urgent dialysis                              |
| ME 2.2 Interpret the results of investigations in the context of the patient’s presentation |
| ME 2.2 Select additional investigations, as appropriate                       |
| ME 2.2 Identify patients who require renal biopsy                             |
| ME 2.3 Establish goals of care                                                 |
| ME 1.3 Apply knowledge of clinical pharmacology as it pertains to drug prescribing in renal disease |
| ME 2.4 Order fluids to optimize volume status and/or renal recovery            |
| ME 4.1 Prevent and/or manage complications of kidney disease                  |
| ME 3.1 Identify indications, timing, and suitable modality for initiation of renal replacement therapy |
| COM 4.3 Answer questions from the patient and family about next steps          |
| COL 1.3 Integrate the patient’s perspective into the care plan                |

**Guidelines for observation and achievement**

Case review ± verification of clinical findings by nephrologist
Achievement of this EPA requires at least 3 observations that document competent performance
These must include
At least 1 native kidney and 1 transplant patient
A variety of causes of AKI: prerenal, postrenal, ATN, nephrotoxicity, GN, and other
For Peds: at least 1 newborn/infant

© 2018 The Royal College of Physicians and Surgeons of Canada. All rights reserved.

_Note._ EPAs = Entrustable Professional Activities; AKI = acute kidney injury; ATN = acute tubular necrosis; GN = glomerulonephritis. CanMEDS Categories for Milestones: ME = medical expert; COM = communicator role; COL = collaborator role._

© 2018 The Royal College of Physicians and Surgeons of Canada. All rights reserved.

_Note._ EPAs = Entrustable Professional Activities; AKI = acute kidney injury; ATN = acute tubular necrosis; GN = glomerulonephritis. CanMEDS Categories for Milestones: ME = medical expert; COM = communicator role; COL = collaborator role.
nephrology trainees? If not, what training experiences or assessments will be untenable to require?

The feedback from this consultation process was collated for review at the May subspecialty Committee meeting, and modifying the current document suite will be reviewed with potential implementation of changes in 2020. This process of quality improvement and the consultation process with the broader nephrology community are expected to be ongoing.

**Potential Limitations of CBD in Nephrology**

The medical education community is aware of 3 areas of concern with CBD that are observed in jurisdictions with competency-based training requirements.

First, reductionism, or the training to a specific list of competencies or EPAs, is felt to be an inevitable consequence of CBD. Schuwirth et al describe how failing to establish adequate curricular and assessment methods can lead to reductionism and a failure to meet the goals of social accountability and professionalism along the way. In developing the EPAs for nephrology, careful consideration has been given to establishing holistic assessment methods that specifically require that EPAs are not overly simplified. For example, EPAs that involve completing a procedure successfully are not limited to just assessing the completed procedure, but instead designed to teach and evaluate a cluster of skills required to complete a procedure successfully, manage the patient safely, and manage the resources of the larger health care system responsibly.

Second, some note that residents view the acquisition of successful EPA completion as a game; residents may seek out the missing EPAs as a focus of advancement while discounting the larger goals of training to be a holistic medical practitioner. This has been described mostly in procedure-based disciplines, but is theoretically possible in any training environment. Again, if an EPA is fundamentally lacking in the complexities that incorporate a safety curriculum, professionalism, and the expectations of society on the delivery of care, then it will be easier to “game the system.” The CBD development process in nephrology has given careful consideration around EPA and milestone development, and an attempt has been made to minimize “gaming the system” by creating a robust list of competencies that go beyond a single skill and include multiple facets of physician attributes that map to existing CanMEDS goals.

The last notable limitation is the perception that CBD is more time-intensive than the current system because of the demands of rigorous assessment and data generation on progress and entrustment. This is likely true, but it is felt that the current degree of supervision has not been to the standard needed to satisfy societal expectations. When individuals are hired into academic centers, there is an expectation that teaching occurs as part of the academic portfolio. CBD merely defines the roles with clear outcomes and expectations of how trainees can be effectively and consistently observed. There is no question that CBD will generate more data from multiple sources on each trainee. The Royal College of Physicians of Canada has created an electronic platform that houses the EPAs for each specialty and can be utilized for tracking assessment and completion of EPAs (ePortfolio). The cost of this system is borne by the Royal College and is available to each academic center to use, if they choose, as the primary competency tracking platform. The data housed in this system will facilitate the work of the competence committees and provide a defensible and data-driven process on which trainees can be promoted through to graduation.

**CBD Document Suite Will Be a Set of Standards**

In parallel to the CBD roll-out, accreditation of postgraduate training programs is also changing. The new accreditation process is the result of a broad consultative process and is outlined in the 2017 accreditation standards by the Canadian Residency Accreditation Consortium (CanRAC). The main difference in the new workflow is a move to a continuous quality improvement model that draws on day-to-day functioning of education programs. The accreditation focus moves away from a problem-based focus of determining largely what, if anything, needs correction and moving to a more balanced assessment both of deficiencies and of excellence or innovation than is seen in the current system. This will enable the specialty committee to incorporate these data into an ongoing assessment of subspecialty standards and the CBD document suite and share innovations across programs and weight-specific standards differently as is determined to better meet the societal expectations for nephrology training.

**Conclusion**

In July 2018, adult and pediatric nephrology training programs will begin rolling out a CBD model of postgraduate education. The process of developing the EPAs, milestones, and required clinical experiences has resulted in a modernization of the training requirements for nephrology subspecialties. A parallel shift in the accreditation workflow will streamline the work of the programs and the subspecialty committee, allowing an ongoing quality improvement process to maintain the relevancy of the training standards over time.
Acknowledgments

Workshop participants: M. Agharazii (Université de Laval); A. Al Abbas (University of Alberta); J. Barton (University of Saskatchewan); L. Bell (McGill University); E. Carlisle (McMaster University); S. Chou (University of Calgary); B. Curtis (University of Ottawa); J. Ethier (Université de Montréal); L. Hamiwka (University of Calgary); S. Iqbal (McGill University); M. Courtney (University of Alberta); B. Curtis (Memorial University); C. Edwards (University of Ottawa); J. Ethier (Université de Montréal); N. Finkle (Dalhousie University); A. Gangji (McMaster University); L. Hamiwka (University of Calgary); S. Iqbal (McGill University); A. Jamal (University of British Columbia); K. Jindal (University of Alberta); J. Kappel (University of Saskatchewan); J. Karpinski (Royal College of Physicians and Surgeons of Canada and University of Ottawa); T. Keough-Ryan (Dalhousie University); N. Langlois (Université de Sherbrooke); I. MacPherson (Memorial University); D. Noone (University of Toronto); K. Pedersen (University of Manitoba); V. Phan (Université de Montréal); P. Pike (Memorial University); M. Pinsk (University of Manitoba); J. Schiff (University of Toronto); K. Shamseddin (Queen’s University); L. Storsley (University of Manitoba); N. Sultan (Western University); J. Vethamuthu (University of Ottawa); C. Weber (McGill University).

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research or authorship of this article. Publication costs were paid through funding provided by the Children’s Hospital Research Institute of Manitoba (MP).

ORCID iD

Maury Pinsk https://orcid.org/0000-0001-7668-665X

References

1. Busing N, Harris K, MacLellan AM, Moineau G, Oandasan I, Rourke J, et al. The future of postgraduate medical education in Canada. Acad Med. 2015;90(9):1258-1263.
2. Frenk J, Chen L, BhuttaZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010;376(9756):1923-1958.
3. van Melle E, Frank J, Brzeznia S, Gorman L. Competency by Design-Residency Education: A Framework for Program Evaluation. DRAFT. Ottawa, Ontario, Canada: Royal College of Physicians and Surgeons of Canada; 2017.
4. van Melle E. Describing a core components framework for CBME. Ottawa Conference; March, 2016; Perth, Australia.
5. CanMEDS Framework: Royal College of Physicians Surgeons of Canada. Accessed March 19, 2018. http://www.royalcollege.ca/rcsite/canneds/canneds-framework-e
6. Frank JR, Snell L, Sherbino J, eds. CanMEDS 2015 Physician Competency Framework. Ottawa, Canada: Royal College of Physicians and Surgeons of Canada; 2015.
7. ten Cate O, Scheele F. Competency-based postgraduate training: can we bridge the gap between theory and clinical practice? Acad Med. 2007;82(6):542-547.
8. Schuwirth LWT, Van der Vleuten CPM. Programmatic assessment: from assessment of learning to assessment for learning. Med Teach. 2011;33(6):478-485.
9. Glover Takahashi S, Waddell A, Kennedy M, Hodges B. Innovations, Integration and Implementation Issues in Competency-Based Training in Postgraduate Medical Education. Members of the FMEC PG consortium; 2011; Ottawa, ON, Canada.
10. Hashimoto D, Bynum IVW, Lillemoe K, Sachdeva A. See more, do more, teach more: surgical resident autonomy and the transition to independent practice. Acad Med. 2016;91(6):757-760.
11. Klass D. Viewpoint: a performance-based conception of competence is changing the regulation of physicians’ professional behavior. Acad Med. 2007;82(6):529-535.
12. Royal College of Physicians and Surgeons of Canada. EPAs and Milestones 2017. http://www.royalcollege.ca/rc/faces/oracle/webcenter/portalapp/pages/ibd.jspx?_afrLoop=04015028645547702&_afrWindowMode=0&_afrWindowId=null!%40%403F_afrWindowId=3Dnull%26_afrLoop%3D4015028645547702%26_afrWindowMode%3D0%26_adf.ctrl-state%3D16fkwz6uw_l4
13. Royal College of Physicians and Surgeons of Canada. EPAs and Milestones 2017. http://www.royalcollege.ca/rcsite/cb/implementation/cbd-milestones-epas-e. Accessed July 1, 2017.
14. Schuwirth L, Ash J. Assessing tomorrow’s learners: in competency-based education only a radically different holistic method of assessment will work. Six things we could forget. Med Teach. 2013;35(7):555-559.
15. Shalhoub J, Marshall D, Ippolito K. Perspectives on procedure-based assessments: a thematic analysis of semistructured interviews with 10 UK surgical trainees. BMJ Open. 2017;7(3):e013417.
16. Canadian Excellence in Residency Accreditation. CanRAC Frequently Asked Questions 2018. http://www.canrac.ca/canrac/faq-e. Accessed March 19, 2018.