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Identifying the policy implications of competency-based education

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Abstract

At their 2009 consensus conference, the International CBME Collaborators proposed a number of central tenets of CBME in order to advance the field of medical education. Although the proposed conceptualization of CBME offers several advantages and opportunities, including a greater emphasis on outcomes, a mechanism for the promotion of learner-centred curricula, and the potential to move away from time-based training and credentialing in medicine, it is also associated with several significant barriers to adoption. This paper examines the concepts of CBME through a broad educational policy lens, identifying considerations for medical education leaders, health care institutions, and policy-makers at both the meso (program, institutional) and macro (health care system, inter-jurisdictional, and international) levels. Through this analysis, it is clear that CBME is associated with a number of complex challenges and questions, and cannot be considered in isolation from the complex systems in which it functions. Much more work is needed to engage stakeholders in dialogue, to debate the issues, and to identify possible solutions.

Introduction

As competency-based medical education (CBME) gains acceptance as an attractive framework for health professions education, educators and learners will face a range of challenges in realizing the full potential of this approach. Recognizing that the advancement of CBME requires a shared understanding of its central tenets, the members of the International CBME Collaborators group have worked to articulate core principles and to arrive at a common understanding of terms. During this process, it became apparent that the implementation of this proposed paradigm will have important policy implications for institutions, medical education leaders, and health care policy-makers. In this paper, therefore, we briefly examine the policy dimensions of CBME in order to stimulate further debate on the issues arising.

Principles, promise, and challenges

The ICBME Collaborators describe three overarching principles that distinguish a competency-based approach to health professions education:

- **physician competence** is "multidimensional, dynamic, contextual, and developmental...[I]t involves multiple domains of ability... For each domain of competence, there is a corresponding spectrum of ability from novice to master... [T]he concept of competence [is] an ever-changing, contextual construct... [such that] each physician has a

Practice points

- Policy development is the process of making organizational or system decisions by considering a number of options and the potential consequences of each.
- CBME has many complex policy implications at the educational program, institutional, and system levels.
- As CBME cannot be considered in isolation from the complex systems in which it is deployed, stakeholder engagement is needed to discuss the advantages, opportunities, issues and possible solutions.

unique constellation of abilities at any time in any one context."

- **competencies** can be viewed as "ingredients of *competence*, which can be assembled from smaller elements of learning... [C]ompetencies are... abilities or capabilities and are the organizing units of CBME."
- **CBME**, therefore, is an educational paradigm whereby curricula are organized with the end – the abilities needed of graduates – in mind. More specifically, it is defined by the ICBME Collaborators as "an outcomes-based approach to the design, implementation, assessment, and evaluation of medical education programs using an organizing framework of competencies." Further, by "working backward [from the desired outcomes], educators can... identify milestones that trainees will need to reach as they acquire

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the required competencies. Instructional methods and assessment tools for these abilities can then be selected to facilitate the development of learners" (Frank et al. 2010).

In comparison with prevailing approaches in contemporary medical education, this conceptualization of CBME promises greater emphasis on outcomes abilities and on the assessment of those abilities at developmental milestones throughout training. It also provides a mechanism for the promotion of learner-centred curricula, along with the potential to move away from time-based training and credentialing in medicine.

However, by the same token, CBME presents several significant challenges. Beyond the work needed to identify, define, and assess competencies in all of the domains important for a practising physician, Frank and coauthors (2010) describe barriers to the adoption and implementation of this approach in the current medical education and health care systems, including the effort that will be required to move away from a time-based system, the resources necessary to meet the demands of teaching, infrastructure, and assessment, and perhaps even augmented workforce requirements (see pp. 638–645 in this issue).

Major policy implications

The term "policy" can be defined in various ways. For the purposes of this discussion, we apply it broadly to refer to the process of making organizational or system decisions by considering a number of options and their potential effects (Torjman 2005). Policy implications can be examined from a number of vantage points, including political, management, financial, and administrative perspectives. In this section, therefore, we examine the concepts of CBME through a wide educational policy lens, noting key considerations for medical education leaders, health care institutions, and policy-makers, at both the meso (program, institutional) and macro (health care system, inter-jurisdictional and international) levels (see Table 1).

Program and institutional policy implications

At the program and institutional levels, the implementation of CBME will have implications for the design and organization of medical education programs, as well as for the alignment of these programs with the delivery of health services. These implications can be described as follows.

1. Logistics of training rotations and health service delivery

In the prevailing model of medical education, both curricula and credentialing tend to emphasize fixed times spent in training (Long 2000; Carraccio et al. 2002; Frank et al. 2010). These fixed training periods easily translate into planned and predictable scheduling for educational rotations, as well as for trainees' participation in the delivery of health services. Defenders of the status quo will argue that trainees in a time-based system who have achieved competence before the end of a rotation can still continue to enrich their abilities, in terms of either breadth or depth; however, no evidence is available to indicate that this is the best way to make such progress.

CBME has the potential to de-emphasize time-based training, meaning that learners may progress at different rates through certain areas, and achieve "threshold" competencies faster or slower than the average. This inherently flexible and learner-centred approach has implications, however, for the scheduling of both medical education and health service provision. How can a unit plan its call schedule when the potential exists for trainees to acquire the competencies needed and leave a rotation early? Can one assume that enough trainees will finish slower than the average, thus balancing out the schedule? The reliance on trainees in the provision of health services may need to be thoroughly examined in order to fully embrace the CBME paradigm. Additional challenges associated with scheduling include the potential for rotations to become bottlenecked by a lack of staff, time, or resources to meet educational needs.

Table 1. Policy implications of the transition to competency-based medical education

CBME core principles	Policy implications	Program/institutional vs system level
Flexibility/learner-centredness	Logistics of training rotations and health service delivery Alternative funding models of medical education Workforce/health human resource implications	Program/institutional System System
Outcomes focus – from design through program evaluation	Lack of valid and reliable standards – work needed to identify and define knowledge and competencies Implications for program evaluation and accreditation	Program/institutional Program/institutional
New roles for teacher and student	Greater involvement from faculty Greater emphasis on faculty development	Program/institutional Program/institutional
New approaches to assessment	Need for valid/reliable yet pragmatic approach to assessment	Program/institutional
New definition of "competence"	Reductionism vs excellence – balance between individual competencies and overall competence Calls for greater accountability – defining competence vs excellence Contextual competence, and implications for practice and licensure	Program/institutional System System

2. The reductionism versus excellence debate

Critics of CBME have highlighted its focus on reducing competence into smaller and smaller component parts (Talbot 2004). Grant (1999), one of the earliest and most vocal commentators, argued that CBME represents an attack on professionalism by virtue of a behaviourist, competence-based approach to clinical training that is overly simplistic and totally inadequate to address the often unquantifiable complexities of expert clinical practice. The reductionist potential of CBME has left it open to criticism on the grounds that the whole is not always equal to the sum of its parts, and that there is an immeasurable *je ne sais quoi* needed for competence that implies the integration of all competencies. That being said, however, there is a lack of evidence that the maturation process of physicians-in-training is best undertaken in a time-based training program rather than through self-directed or experiential learning.

In adopting a CBME model, medical educators must consider how to base curricula and assessment on individual competencies while not neglecting the less tangible aspects of an overall, integrated competence such as described by Grant (1999). In addition, educators must consider the role CBME models can play in preparing graduates for the pursuit of excellence over a lifetime of self-directed learning in practice.

3. Greater involvement from faculty and greater emphasis on faculty development

CBME will require greater faculty involvement in terms of direct observation and assessment, as well as in the supervision of individualized learning pathways (Holmboe 2004; Frank et al. 2010). The implication may be a need for additional faculty, or for individual clinical teachers to spend more time teaching, thus taking clinical practice time away from an already underserved enterprise. Regardless, the need for greater faculty input raises various questions for leaders of medical education programs and academic centres. How can the need for additional involvement from faculty be organized? What is the potential impact on patient care? What are the implications for remuneration? Will additional personnel be required? Adding to the complexity is the familiar reality that issues concerning the need for additional resources are often the shared responsibility of a number of stakeholder groups, such as governments, academic centres, hospitals, and other health care organizations.

In addition, significant investments in *faculty development*, including an emphasis on change management, will be needed to equip both new and existing faculty with the knowledge and tools to first understand, and then implement, a competency-based approach.

4. The importance of assessment

As other contributors to this theme issue note, contemporary medical education tends to emphasize process issues (instructional methods) over outcomes (e.g., graduate competence, physician performance, learner satisfaction, or patient care quality). A CBME approach moves toward defining and then designing education around desired

outcomes – that is, the competencies needed to prepare trainees for practice.

If the design of educational curricula changes to focus on outcomes, so too must assessment. Assessment tools and strategies are needed to measure the desired outcomes; in the case of CBME, the ability to measure trainees' achievement of stated competencies is essential (Holmboe et al. 2010).

Thus, CBME has implications for the design of formative and summative assessment tools; both will be needed to explicitly measure, in a manner that is both pragmatic and holistic, the acquisition of competencies and trainees' progress toward milestones throughout their training. Medical educators and leaders must consider how new, robust, assessment tools that measure competencies and provide trainees with constructive feedback about competency milestones can feasibly be developed and implemented. In addition, in a CBME approach, medical educators must consider how to define concepts such as "terminal failure," such that training does not become an endless loop of remediation for certain individuals.

5. Outcomes-based approaches to program evaluation and accreditation

If CBME promises a greater emphasis on outcomes, standards and systems of accreditation must also evolve to evaluate the ability of training programs to deliver those outcomes – that is, to prepare graduates adequately for practice. Although a shift toward outcomes-based program evaluation is associated with many benefits and opportunities, including greater accountability for outcomes achieved, it is also fraught with challenges. The selection of outcome measures and definitions, as well as data collection and interpretation, must all be carried out with caution.

Experience at both the Royal College of Physicians and Surgeons of Canada and the American College of Graduate Medical Education with the implementation of competency-based frameworks (CanMEDS, and the Outcomes Project, respectively) have shown that the shift toward greater emphasis on outcomes through accreditation has been slow. In Canada, although training programs have been required since 2002 to demonstrate how they are teaching and assessing the CanMEDS competencies, programs and universities are not held accountable for their graduates' success or failure in attaining the competencies needed for practice (Royal College 2009).

System-level policy implications

CBME also has implications for medical education leaders and policy-makers at the macro system level with respect to funding, health human resources, licensure, and accountability to the public.

1. Funding of medical education

Moving away from a time-based model of medical education will have implications for the funding of medical education programs by governments and other payers. In traditional

systems, residency positions are funded on the basis of fixed blocks of time, making it possible to predict costs and to plan annual budgets. Moreover, in many jurisdictions residents are paid for their role in health service provision using a graded pay scale based on rank. What changes will be needed by universities, governments, and other stakeholders to enable funding of medical education that is as flexible and learner-centred as the curriculum? How can a dialogue between the various payers and stakeholders be facilitated to examine this complex issue? What options exist to facilitate the funding of competency-based medical education, such as block funding per graduate that is not tied to length of training? What unintended consequences might arise from certain funding models (such as a financial incentive to ensure that trainees finish early), and how can they be mitigated by checks and balances, including accountability for the competence of graduates?

Health human resource implications

In some jurisdictions CBME has been praised as an opportunity to prepare graduates for practice in less time than traditional models. In particular, the Australian government has said that, by emphasizing the skills and competencies needed by graduates, a competency-based model can actually help to address workforce shortages (Productivity Commission 2005; National Health Workforce Taskforce 2008, 2009; National Health and Hospitals Reform Commission 2009). Others believe that competency-based programs can shorten length of training by eliminating non-essential areas from the curriculum and allowing trainees to progress swiftly through areas of the curriculum that they quickly master (Grantcharov Reznick 2009).

However, there remains a lack of evidence that CBME will shorten training and thus help to relieve workforce shortages by accelerating entry into practice. It may be argued that this hope is short-sighted, for it fails to consider issues such as differences among individual learners, trainees' essential role in health service delivery, and the time needed for trainees to mature and integrate the competencies they acquire into overall competence and fitness for practice. Indeed, the effect of the proper implementation of CBME may be, in some cases, to lengthen training. Although concrete data are needed on whether training will, on average, be shortened, lengthened, or remain the same, it is clear that CBME will have implications for workforce planning, adding another layer of complexity to an already challenging issue. The very notion that the competencies of learners should be derived from the needs of those served by graduates (i.e., societal health needs) is challenging, given that the definition of those needs varies by perspective; indeed, the fact that no universal definition exists implies the imperative to better explore and define those needs in order to inform medical education and workforce planning.

The need for greater accountability, and the competence vs excellence debate

One of the major drivers for improving medical education in the 21st century has been a call for greater accountability, at

both the program and system level, for the quality of graduates produced (Curry et al. 1993; Donaldson 2001; Steering Committee 2001; Kwasnik 2004). Given its focus on outcomes tied to preparedness for practice, CBME is uniquely positioned to meet this demand; however, the selection of what and how to report merits careful consideration by medical education leaders and policy-makers alike. It may require an examination of current systems of certification and licensure, a clearer understanding of societal health needs, as well as the consideration of medico-legal implications. Lastly, demands for greater accountability may have implications for traditional paradigms of "professionalism" and the notion of medicine as a self-regulated profession (Murray et al. 2000; Donaldson 2001; Irvine 2001; Lanier et al. 2003).

The ability to "report" on graduates' competence also requires the education of the public, governments, and other stakeholders about what is expected of graduates, the notion of competence itself and, more importantly, the concept that expertise is a life-long pursuit (Campbell et al. 2010). As stated by Dreyfus and Dreyfus (1986), the quest is not for a competent specialist, but for an expert, and this might not be accomplished by the end of formal postgraduate training. There is a need to educate the public, governments, and other stakeholders that one's exit from residency programs does not guarantee expertise. Although there is a responsibility to the public to assure that graduates to independent practice are *competent* – i.e., they have attained minimum standards of competence in all domains needed for a certain context – the medical education community must also ensure that those exiting are prepared for life-long progression toward *expertise*, recognizing that the definition of competence may change regularly within designated areas of practice.

4. Implications of "contextual" competence for practice and licensure

The concept of contextual competence has implications for life-long learning, practice, and licensure. If being *competent* means "possessing the required abilities in all domains in a certain context at a defined stage of medical education or practice" (Frank et al. 2010), the ICBME Collaborators also feel it is essential to define what it means to be *incompetent*, i.e., "lacking the required abilities in all domains in a certain context at a defined stage of medical education or practice," and what is meant by *dyscompetence*, i.e., "possessing relatively less ability in one or more domains of physician competence in a certain context and at a defined stage of medical education or practice." All three definitions make explicit the notion that competence cannot be considered or measured in isolation from the practice context under consideration.

What implications do these definitions have for certification, licensure, continuous professional development, and the maintenance of competence programs? If these definitions are endorsed and adopted, will practice-based assessment become a requirement for licensure and, potentially, re-certification/validation? What are the implications of context for the definitions of "competence" across jurisdictions and, ultimately, for the portability of credentials?

Lastly, who decides on the "context"? Is there a risk of favouring increasingly specialized areas of medicine, such that the context becomes increasingly focused and the breadth of necessary competencies more narrow? If so, what are the implications for generalist specialties and society?

Conclusions

This paper is an initial exploration of meso- and macro-level policy and systems issues associated with a competency-based approach to medical education. It is clear that CBME cannot be considered in isolation from the complex systems in which it is meant to function. Similarly, it is clear that CBME presents a number of potential advantages and opportunities, coupled with complex challenges and questions, which implies that transforming time-based medical training to a competency-based system will be a daunting task, even if there is acceptance of the theoretical precepts of CBME. Much more work is needed to engage stakeholders, including medical education leaders, trainees, academic centres, health care institutions and providers, medical regulatory authorities and licensing bodies, accreditation bodies, governmental agencies, and society, to discuss the advantages, opportunities, issues and possible solutions.

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