Centre for Faculty Development
Stepping Stones Program
Annotated Bibliography

Competency-Based Medical Education

By: Dr. Ra Han

Dr. Ra Han is a pediatric cardiologist at St. Michael's Hospital and the Hospital for Sick Children. She joined the Stepping Stones program to support her new role as the Director of Medical Education for the Department of Pediatrics at St. Michael's Hospital. The program has inspired her to continue her education with the Masters of Science in Community Health - Health Professionals Teacher Education program in the fall.

Question: Is competency-based medical education better than the current time-based curriculum? What is the evidence?

Recently, I attended a presentation on competency-based education in a postgraduate medical program completely separate from my discipline. There was a tremendous amount of work that had been done in the Netherlands but not accessible due to the language barrier. Hence, one of the physicians with an interest in education translated the program into English, module by module, and it was much more comprehensive than I had imagined. From identifying the very specific competencies, to developing specific milestones and evaluation tools, and the mapping of CanMED roles, it was fascinating and I was excited to develop something similar in my department. It would take a daunting amount of time and effort to develop the curriculum, implement and evaluation, and maintain. There is on face intrinsic logical value to adopting a competency based program but is there evidence to justify the investment? What is the evidence for competency-based medical education?

Article 1

Frank JR, Mungroo R, Ahmad Y, Wang M, De Rossi S, Horsley T. (2010) Toward a definition of competency-based education in medicine: a systematic review of published definitions. *Medical Teacher* 32:631-637.

The lead author is the Associate Director of the Office of Education at the Royal College of Physician and Surgeons of Canada. They sought to find a common definition for competency-based education (CBE) and performed a systemic review of conventional (MEDLINE, EMBASE, ERIC) and nonconventional sources (Google). They identified common themes among definitions and proposed a contemporary definition of CBE as "an approach to preparing physicians for practice that is fundamentally organized to graduate outcome abilities and organized around competencies derived from an analysis of societal and patient needs. It deemphasizes time-based training and promises greater accountability, flexibility, and learner-centeredness." However the proposed definition seems overly long, and laden with value statements such as "promises" which may limit its general acceptance and use. This is an excellent paper identifying the themes in CBE and the variations in definition, and hence meets its objective of advancing the discourse.

Article 2

Stillman PL, Sabers DL. (1978) Using a competency-based program to assess interviewing skills of pediatric house staff. *Journal of Medical Education*. 53:493-496.

This paper demonstrates the long history of competency-based education in postgraduate medical education. Dr. Paula Stillman is a pediatrician who has had a lasting influence in medical education by introducing "patient educators" which evolved into "standardized patients" and the OSCE. Dr. Darrell Sabers is a PhD in education psychology. In this paper, the authors describe the impact of introducing the evaluation tool to the pediatric house staff prior to their evaluation. First year pediatrics residents performed an interview with a "trained mother" and were evaluated with a standardized tool. Two of 13 residents failed to meet minimum passing level and required remedial instruction. The following year, the new residents were introduced to the evaluation criteria at the start of their training and all passed. There is a small sample size and possible confounding factors but the need for observation and objective evaluation are lasting principles to this day.

Article 3

Kjaer NK, Kodal T, Shaughnessy AF, Qvesel D. (2011) Introducing competency-based postgraduate medical training: gains and losses. *International Journal of Medical Education* 2:110-115.

The senior author is the head of Postgraduate Medical Education at the University of Southern Denmark and the other authors are family physicians with published research in education. They surveyed trainees who completed the new 12-month competency-based internship and those who completed the traditional 18-month process-oriented internship at the same time period. With a response rate of 65%, the trainees who completed the shorter competency-based internship felt less prepared for clinical practice or subspecialty training, and less confident in their clinical skills. There are many limitations to this study. There is no objective assessment of clinical skills (e.g. standardized test scores, clinical skills assessments) to support the subjective reports. More importantly, the competency-based program is also time-based, and complicated by a shorter training period. Hence, it is not clear how much each component contributed to the results and may not justify the authors' caution against widespread implementation of competency-based education.

Article 4

Kerdijk W, Snoek JW, van Hell EA, Cohen-Schotanus J. (2013) The effect of implementing undergraduate competency-based medical education on student' knowledge acquisition, clinical performance and perceived preparedness for practice: a comparative study. *BMC Medical Education* 13:76-

The authors are researchers in the Center for Innovation and Research in Medical Education in the Netherlands or "educationalists" with a focus on competency-based education. They compared recent graduates in a newly implemented competency based active learning (CBAL) clerkship program to a historic cohort prior to the program, and a contemporary cohort at other schools. There was no significant difference in knowledge acquisition (standardized test scores), clinical performance (clerkship grades), and perceived preparedness (survey). This suggests that taking time away from the traditional knowledge acquisition curriculum for CBAL has no negative impact, but also that CBAL does not improve perceived readiness for medical practice. The methodology appears excellent. The authors used two different control groups to overcome the non-randomization of the study population in this case-cohort study. They also utilized existing measurements which maximized capture. Follow-up of clinical performance after medical school may provide a more accurate assessment of preparedness.

Article 5

Glover Takahashi S, Waddell A, Kennedy M, Hodges B. (2011) Innovations, Integration and Implementation Issues in Competency-Based Training in Postgraduate Medical Education. Members of the FMEC PG consortium.

The authors are highly experienced postgraduate medical education researchers at the University of Toronto with biographies helpfully provided within the commissioned paper. This comprehensive document provides an overview of the current status of competency-based training in the postgraduate medical education setting. Using literature review, interviews, and qualitative analysis, they summarize 5 current working examples from different disciplines and derive lessons from their development. Themes arose including rationale for CBME, need for enhanced assessment practices and education models. There appears to be an acknowledgement that evidence for effectiveness is lacking but there are features of competency based education that appear to be intrinsically beneficial. This appears to be an excellent background paper for anyone interested in implementing competency based education with an appendix that provided further information on the methods and examples.In future directions, greater emphasis on program evaluation methods could improve the lack of evidence in this field.