



## 10 Length of training in Postgraduate Medical Education in Canada

### Co-leads

Sarkis Meterissian

Mathieu Rousseau

### Authors

Joyce Maman-Dogma

Mathieu Rousseau

Marion Dove

Charo Rodriguez

Sarkis Meterissian

A Paper Commissioned as part of the Environmental Scan for the Future of Medical Education in Canada Postgraduate Project



THE COLLEGE OF  
FAMILY PHYSICIANS  
OF CANADA



LE COLLÈGE DES  
MÉDECINS DE FAMILLE  
DU CANADA

  
COLLÈGE DES MÉDECINS  
DU QUÉBEC

  
ROYAL COLLEGE  
OF PHYSICIANS AND SURGEONS OF CANADA  
COLLÈGE ROYAL  
DES MÉDECINS ET CHIRURGIENS DU CANADA

This Environmental Scan was commissioned by the Future of Medical Education in Canada Postgraduate (FMEC PG) Project, funded by Health Canada and supported and managed by a consortium comprised of the Association of Faculties of Medicine of Canada (AFMC), the College of Family Physicians of Canada (CFPC), le Collège des médecins du Québec (CMQ) and the Royal College of Physicians and Surgeons of Canada (RCPSC), with the AFMC acting as the project secretariat.

### **Acknowledgements**

The authors wish to acknowledge the support of the University of British Columbia, the University of Toronto and McGill University in this study.

How to cite this paper: Maman-Dogma J, Rousseau M, Dove M, Rodriguez C, Meterissian, S. Length of Training in Postgraduate Medical Education in Canada. Members of the FMEC PG consortium; 2011.

Copyright © 2011 by The Association of Faculties of Medicine of Canada; The College of Family Physicians of Canada; Le Collège des médecins du Québec; and, The Royal College of Physicians and Surgeons of Canada. All Rights Reserved.

Published by: members of the FMEC PG consortium.

## **Executive Summary**

This paper is based on a literature review and key stakeholder interviews to explore factors that influence the length of postgraduate medical training in Canada for family medicine and specialty medicine. These factors were categorised as external (i.e., any influence outside the training programs) or internal (i.e., determinants from inside the programs).

There is little literature that specifically addresses the length of training in postgraduate medical education (PGME). Indeed, only five articles were identified that discussed influences on LoT, and these were specific to a single specialty (e.g., family medicine or emergency medicine) or location (e.g. Ireland).

Based on the limited literature and eight key stakeholder interviews, we have drawn the following 3 key messages for the future of PGME:

1. There is currently no sound evidence to support the lengthening or shortening of the length of training for either family medicine or specialty medicine.
2. The integration of competency-based medical education (CBME) in a time-based format is the major current and future challenge for PGME program directors and postgraduate deans.
3. When it is appropriately implemented, it may have a significant effect on LoT, but it is uncertain whether CBME will shorten or lengthen the training overall, or simply introduce variability into the length of training.

## **Background**

In many developed countries, Postgraduate Medical Education (PGME) is undergoing changes required or recommended by medical professionals, educators, policy decision-makers, medical students, hospitals, and society [1-4]. Many of these changes are expected to have an impact on the length of postgraduate medical training (LoT). Reasons given to justify changes that may affect LoT vary according to the source, and they include: 1) the evolution from a traditional time-based educational model to CBME outcomes-based model [5]; 2) responses to the growing political, economic, social and technological pressures on the educational system [6]; 3) the need for a more cost-effective training system [7]; and 4) the importance of lifestyle considerations in residents' career choices [8].

In Canada and in other countries in the developed world, the current LoT reflects a balance between accrediting bodies' requirements and many factors which affect PGME curricular delivery. Some of the predictable outcomes of the reforms named above are on when, where and how PGME will be organised. But the aspect of PGME most likely to be affected will be its duration.

The current two-year residency in family medicine (FM) in Canada is the shortest in the world. Indeed, in Europe the FM residency training is generally four to five years, while in the USA it is three years, but lengthening it to four years is under consideration. In Canada, residency in FM originated in the 1960s, and it was three years in length. For various political and funding reasons, the LoT was later reduced to two years. In the year 2000, universities in Quebec (Laval, Sherbrooke, University of Montreal, and McGill) proposed the extension of FM residency from two to three years in order to ensure that residents are well-equipped for practice. But due to opposition by policy makers, this proposal was abandoned.

For other specialties, the LoT varies from four to six years in Canada, and is comparable to that of other countries in the developed world. Increased interest in sub-specialization usually adds an additional one or two years to residents' training.

This paper looks at future trends in LoT in PGME in Canada. It is one of 24 papers commissioned for the Future of Medical Education in Canada Postgraduate (FMEC PG) Project. The objectives of this paper are:

- to review systematically the published evidence about the major influences on PGME LoT;
- to identify current and future challenges on Canadian PGME LoT as expressed by Canadian experts in PGME;
- to integrate the findings from these two sources to highlight priority factors in determining the ideal LoT in Canadian PGME.

## **Methodology**

Systematic mixed studies review and qualitative descriptive research design were combined to satisfy our research objectives. As part of this research, accredited McGill Institutional Review Board approval was received for the development of the qualitative descriptive research section of our study.

## Literature Review

### Data source and search strategy

We performed a systematic electronic search for articles (2000 - present) related to length of PGME training using the MEDLINE database. We used various combinations of keywords, suggested by experts in PGME, including: Program (Education medical graduate, Educational models, Postgrad\* medical education, medical education graduate, Internship / residency / clerkship / Physician / doctor / Specialty) AND length (Length, Duration, Time, Year, Schedule) AND type of training (Training, Program\*, Curricul\*, Model\*). A librarian assisted with the design of the search strategy. The search was expanded through snowballing techniques by a systematic screening of the references of relevant studies.

### Studies identification and selection

Qualitative and quantitative articles published in English or French from 2000 onwards were included in a master bibliographic list. Relevant studies from countries other than Canada were included. All types of published articles including empirical research, editorials, comments or opinions were included in this systematic review.

A two-stage selection process was performed. First, articles were retained based on their titles and abstracts. Relevance of articles was established by at least two reviewers. Divergent opinions were resolved by discussion until consensus was reached. Full-text articles retained from the first selection were then screened by at least two reviewers and a final list of 29 articles was generated. Studies were included only if they explicitly addressed LoT as a core subject or analysed its relationships to other topics.

### Data extraction and synthesis

An analytical framework was developed in order to assess major issues related to the duration of PGME. Items in this framework included the aim and type of study, country, methodology, core findings and recommendations. We adopted a narrative synthesis approach in order to bring together knowledge from papers using different methodologies. Summaries of and comments on the relevant articles were gathered from each reviewer.

From a total of 468 articles identified, 113 full-text articles were screened carefully, 29 articles were reviewed completely, and five met the inclusion criteria previously defined.

Figure uses the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to illustrate, with a flow diagram, the process of the selection of articles, the identification of the retained articles and the overall result of the literature review [15, 16].

### Qualitative descriptive study

A qualitative descriptive research design [9, 10] was adopted to identify major influences on and to understand the opinions and thoughts of key stakeholders in PGME about the current LoT in Canada and trends that could result in pressures to change (i.e., extend or shorten) the current LoT.

### Selection of key stakeholders

We used a purposeful criterion sampling with maximum variation [11, 12] for selecting potential interviewees. Participants had to be key stakeholders in PGME and involved or interested in the

debate on LoT in PGME. A total of eight key stakeholders were interviewed (see Table 1 for participants' characteristics).

**Table 1: Characteristics of respondents**

Categories of key players	Area of expertise		Total
	Family medicine	Specialties	
Medical educators	3	1	4
Policy decision-makers	1	3	4
Total			8

#### Data collection

Semi-structured interviews constituted the strategy for data gathering. An initial interview grid was developed based on the results of the literature review and was adapted as the interviews progressed. Participants were asked to elaborate freely on the major challenges and trends concerning the current LoT in PGME. Face-to-face interviews were conducted unless the respondent was outside Quebec, in which case the interview was conducted by phone. All interviews were conducted and recorded with the participants' written consent.

#### Data analysis

The verbatim transcriptions of the interviews were coded and analyzed using QSR International's N'VIVO 8 software. A deductive-inductive thematic analysis was carried out [13] with a gradually developed coding scheme. Initial codes were generated through the literature review and refined as the analysis progressed [13]. Themes were searched for, defined and named, and a reverse coding ensured the rigour of the coding process [14].

### Results

#### Major influences on PGME length of training: a systematic mixed studies review

None of the five reviewed articles specifically addressed the LoT in PGME as a core topic. Rather, all five discussed the influences of other factors on LoT. These factors were categorised as external (any influence outside the PGME programs) or internal (determinants from inside the programs). Examples of external influences include residents' duty hour regulations, addressed in three of the retained articles [17-19], and the impact of an additional year of training for general practitioners in Ireland [20]. Another article discussed the shift to outcomes-based evaluation as a major potential internal influence on LoT [5].

#### External influences

The literature is controversial regarding the educational effects of duty hour regulations on PGME LoT. A narrative review of duty hour regulations suggested that LoT may need to be longer if it emerges that residents' clinical skills are deficient because of fewer hours of training [17]. A consensus report from representatives of Emergency Medicine also suggested that an increase in LoT may be necessary because attainment of milestones determined by time-based

indicators is the current measure of competence [19]. These authors found that as many as 40% of Emergency Medicine Program Directors felt that the LoT should be increased in order to allow residents to satisfy their training requirements with fewer work hours per week. However, a cohort study looking at operative experience in three surgical specialties with reduced duty hours concluded that there was no demonstrated decrease in the volume of procedures. Paradoxically, the overall number of procedures actually increased [18].

With regard to the extension of LoT, one study evaluated the effects of adding a year of training for general practice residents in Ireland, to bring that the LoT in line with European norms [20]. Learners were more confident entering practice after four years of training; they cited positive changes in the learning environment in the final year, including significant professional and personal development due to the lack of pressure for exam preparation. Furthermore, they affirmed that the combination of general practice and hospital rotations was beneficial.

#### Internal influences

Hodges [5] explored the implications of time-based (tea-steeping) and outcomes-based (i-Doc) models for medical education. He concluded that the implementation of outcomes-based education could enable the PGME curriculum to be adapted to societal needs and could instigate modularized training. However, the need for more individualized training might be a major challenge to implementing a program that is fully competency-based. Addressing this challenge could lead to programs that are variable in length.

#### Major influences on the length of training in Canadian PGME: key stakeholder interviews

Major influences on LoT identified by key stakeholders, as extracted by thematic analysis, were grouped into two categories as in the literature review: external and internal. External influences reported were: prevalent paradigms in medical education; the international context; societal changes; PGME quality control process; the professional context of practice of residents; UGME educational and institutional context; and work hour regulations (see Table 2). Internal influences were similar to those identified in the literature review (see Table 3).

**Table 2: External influences on PGME length of training, current situation, possible changes and postulated effects based on interviews**

MAIN THEMES	CURRENT SITUATION	CONSEQUENCES ON PGME CURRENT LoT	POSSIBLE CHANGES OR EXAMPLES	POSTULATED EFFECTS
Prevalent paradigms in medical education	FM and specialties separated	NA	FM and specialties as one block and not fragmented parts	NA
	UGME and PGME functioning in silos	LoT extended	Learning: a lifelong learning process Medical education: a continuum from UGME to the context of practice	LoT shortened or unchanged
International context	Insufficient exposure to interprofessional education (IPE)	NA	Effective IPE (e.g.: some teachings could be done by other health professions)	
	PGME influenced by changes to PGME in the USA and the rest of the world	LoT extended	Identify the specificities of the Canadian context Disconnect the debate from the USA model	LoT shortened or unchanged
Societal changes	Increased feminization (more parental or maternity leaves) Preferences for controllable lifestyle	LoT extended or maintained	Adapt PGME programs to learners' preferences	LoT extended
Regulations : resident duty hours	Limited influence on LoT	LoT extended or maintained	Depth analysis of actual time spent at hospitals needed	LoT extended or unchanged
« Quality control process »	Highly competitive accreditation process High standard programs	NA	NA	NA
Context of practice	Many occasions to be explored	NA	Mentorship Professional development	LoT shortened or unchanged
UGME educational and institutional context	UGME curriculum developed independently from PGME Clerkship appears to be a succession of disjointed courses	LoT extended or maintained	Better recruitment tools and procedures Connection to PGME curriculum content	LoT shortened or unchanged

**Table 3: Internal influences on PGME length of training, current situation, possible changes and postulated effects based from interviews**

MAIN THEMES	CURRENT SITUATION	CONSEQUENCES ON PGME CURRENT LoT	POSSIBLE CHANGES OR EXAMPLES	POSTULATED EFFECTS
<b>PGME educational and institutional context</b>				
<ul style="list-style-type: none"> <li>Type of curriculum</li> </ul>	Mainly time-based curriculum Some programs are in transition towards outcomes-based curriculum	LoT extended	Well thought CBME: <ul style="list-style-type: none"> <li>• CBME in a time-based format</li> <li>• Adequate assessment tools</li> <li>• Clear definition of competences</li> <li>• Individualized training</li> <li>• Administrative requirements</li> <li>• Flexibility</li> <li>• Differentiate between technical skills and communication abilities, behaviours...</li> </ul>	LoT extended or maintained
<ul style="list-style-type: none"> <li>Training environment</li> </ul>	Most of students trained in tertiary hospitals	NA	Align training environment with populations needs Create training environments that reflect real-world practice, skills could be learned easily and quickly	LoT shortened or unchanged
<ul style="list-style-type: none"> <li>Training objectives and specializations issues</li> </ul>	Important gap between population needs residents career choices Trend towards overspecialization A part from Quebec, residents choose autonomously their specialization	LoT extended	Match between scope of practice and curricular content Align population needs and residents career choice Develop a model to influence residents specializations choice (Quebec funding model)	LoT shortened or unchanged

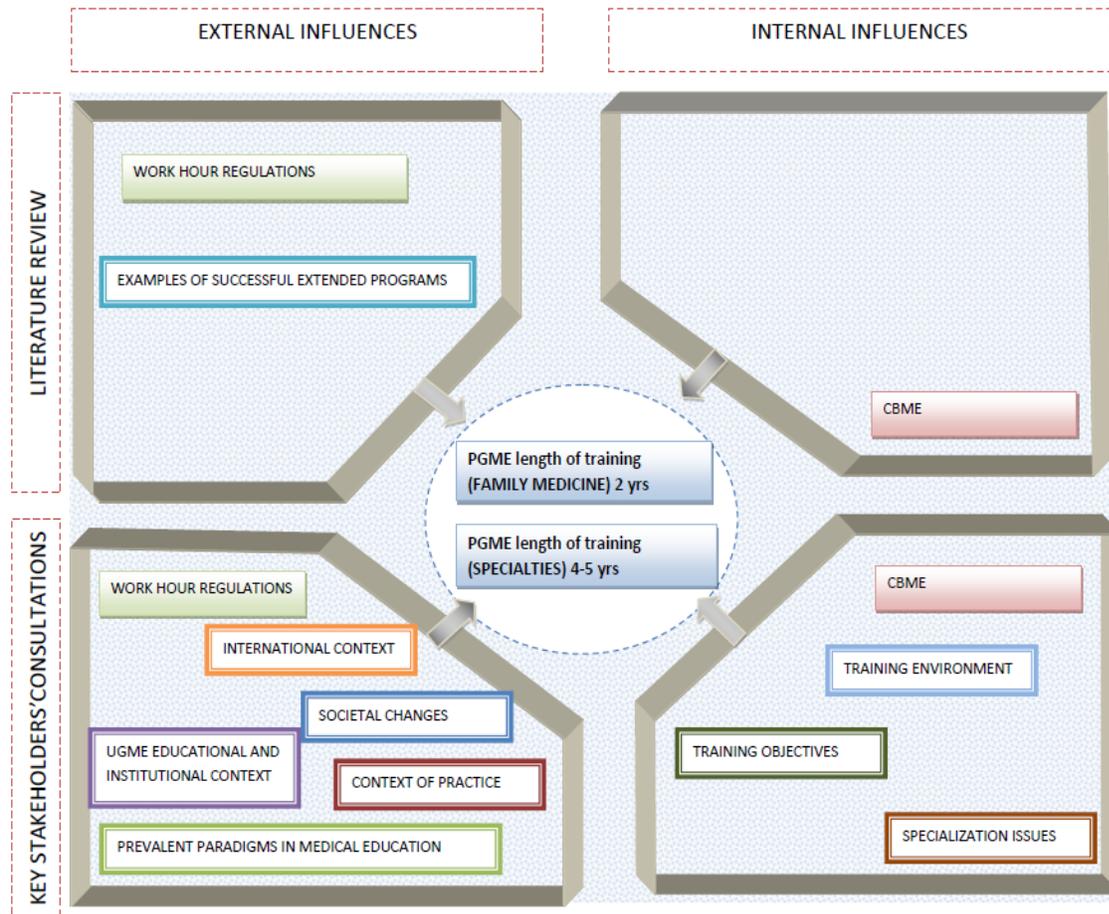
## Opinions on LoT in Canadian PGME: key stakeholder interviews

Almost all key stakeholders were satisfied with the current LoT in FM and in specialty medicine. Even if some key stakeholders suggested that the length of specific specialties such as internal medicine might be reconsidered, all interviewees unanimously recommended that the current LoT be kept unchanged for now until important challenges are appropriately dealt with. They emphasized that changing the LoT could be an easy solution for PGME challenges, but in-depth analysis should precede any change in the LoT. **Error! Reference source not found.**4 below and Table 5 (in Appendix 4) quotes statements that illustrate key stakeholders' opinions on the current LoT in Canadian PGME. Figure 1 provide incorporates literature review and qualitative research findings.

**Table 4: Key stakeholders' opinions on current Canadian LoT, some illustrative quotes**

<p><i>"Concerning length, the training is long, but seems appropriate. And with respect to the basic disciplines, like internal medicine and paediatrics, when they added a fifth year to paediatrics, they consulted me and I was against it, I thought it was useless to add a fifth year to paediatrics. For internal medicine, I also think that it's useless. The length of training is sufficient".</i> Policy decision-maker</p>
<p><i>"Are 4 years LoT enough? I think 4 years are sufficient if they are well planned and managed".</i> Policy decision-maker</p>
<p><i>"Overall I think most groups have appropriate length of training".</i> Medical educator</p>

**Figure 1: Summary of our results (literature review and qualitative research)**



## Discussion

In this study, we reviewed current evidence about the LoT and explored the opinions and attitudes of key stakeholders in Canadian PGME.

One important external influence was the limited time for educational activities in hospitals due to work hour regulations and/or societal changes (e.g. preference for controllable lifestyle). Initial fears that reduced duty hour legislation (USA 2003) would decrease residents' clinical exposure have not been confirmed in a systematic way [18]. Since current evidence on this topic originates in the USA, more adequate evaluations of the effects of reducing work hours are needed in the Canadian context.

Other external influences on current LoT include expansion of curricular requirements of accrediting bodies, which conflicts with the desire of policy decision-makers to decrease LoT to satisfy health human resource needs. With the increasing complexity of modern medicine, medical educators are finding it more and more difficult to include the entire prescribed curriculum within the allotted LoT. In an effort to maximize learning, the actual time spent by residents in non-educational activities (ordering tests, drawing blood) has been reduced over the last 20 years. Nevertheless, the balance between service and education is a constant struggle. Residents currently spend far less than the official 60 or 24 months in training. Subtracting vacations, conference leave and study leave, our current residency programs are, at best, about

54 months in specialties and about 23 months in family medicine. Policy changes around LoT should take this into account.

One of the reasons cited by key stakeholders for not changing the LoT is that physicians should be capable of lifelong learning. Most curricula have expanded to such a degree that residents are bombarded continually during their training with knowledge and procedural skills such that they do not have time to absorb, integrate and reflect upon this new knowledge. As a result, many trainees opt for sub-specialization, as they do not feel competent managing a wider body of knowledge and skills. Our research has demonstrated that residents must be trained to adapt to medical advancements, to keep up-to-date and to keep track of personal competence.

One of the most important internal influences on LoT that we found is the increasing debate on the advantages and disadvantages of CBME (Frank, Mungroo et al 2010). In 2002 Epstein and Hundert (2002) defined competency as follows: The habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served (Epstein and Hundert, 2002 page 266). Epstein and Hundert (2002) go on to say that competence builds on a foundation of basic clinical skills, scientific knowledge and moral development. Referring to [21], they state that whereas “performance is directly measured, competence is an inferred quality”. From this follows that the competence of a physician is a quality that integrates knowledge and technical skills with communication abilities and professional attributes.

The current “tea-steeping” model [5] of PGME infers competence after training for a specified time, during which residents have, in theory, been given formative feedback, including in-training evaluations, examinations and other objective annual assessments. However, medical educators still do not fully understand the mechanism by which residents transition from “knowing how” to “actually doing” [22]. Since not all learners reach the desired outcome (competency) in the same way, it is up to medical educators to determine the most favourable route. This should include an appropriate balance between standardized and individualized learning processes, in order for the journey to be feasible for all learners. This might have a significant effect on LoT, shortening it for some and lengthening it for others.

Medical educators should also address factors that will affect their trainees’ ability to learn: work hours, educational resources and educational ability of the teachers (faculty development is crucial in outcomes-based programs). Potential difficulties in adopting a pure outcomes-based approach include the logistics of scheduling rotations, fixed funding schemes for resident salaries, health and human resource planning, lack of resources and the need for new educational technologies [23, 24].

In summary, based on our results, we argue that we should integrate the best aspects of CBME within the current time-based training format in our Canadian context. In so doing we will make our present two- and five-year programs learner centered and focussed on the development of competency. In addition, we will be able to meet societal needs in a more transparent way and develop residents’ abilities to become lifelong learners. Ultimately, we expect that with improved assessment of their skills, residents’ confidence will increase and this will, in turn, prevent sub-specializing. Residency is just one step in the development of a competent physician, and discussions of LoT must consider the continuum from UGME to continuing medical education.

## References

1. Ten Cate, O., Medical education in The Netherlands. *Medical Teacher*, 2007. 29(8): p. 752-7.
2. Grant, J.R., Changing postgraduate medical education: a commentary from the United Kingdom. *Medical Journal of Australia*, 2007. 186(7 Suppl): p. S9-13.
3. Dowton, S.B., et al., Postgraduate medical education: rethinking and integrating a complex landscape. *Medical Journal of Australia*, 2005. 182(4): p. 177-80.
4. Teo, A., The current state of medical education in Japan: a system under reform. *Medical Education*, 2007. 41(3): p. 302-8.
5. Hodges, B.D., A tea-steeping or i-Doc model for medical education? *Academic Medicine*, 2010. 85(9 Suppl): p. S34-44.
6. Brice, J. and O. Corrigan, The changing landscape of medical education in the UK. *Medical Teacher*, 2010. 32(9): p. 727-32.
7. Barros, P.P. and S.R. Machado, Money for nothing? The net costs of medical training. *Health Care Management Science*, 2010. 13(3): p. 234-55.
8. Schwartz, R.W., et al., The controllable lifestyle factor and students' attitudes about specialty selection. *Academic Medicine*, 1990. 65(3): p. 207-10.
9. Sandelowski, M., Whatever happened to qualitative description? *Research in Nursing & Health*, 2000. 23(4): p. 334-340.
10. Sandelowski, M., What's in a name? Qualitative description revisited. *Research in Nursing & Health*, 2010. 33(1): p. 77-84.
11. Patton, M.Q., *Qualitative Research and Evaluation Methods*. 3rd ed. 2002, Thousand Oaks: Sage.
12. Sandelowski, M., Combining qualitative and quantitative sampling, data collection, and analysis techniques in mixed-method studies. *Research in Nursing & Health*, 2000. 23(3): p. 246-255.
13. Braun, V. and V. Clarke, Using thematic analysis in psychology. *Qualitative Research in Psychology*, 2006. 3(2): p. 77 - 101.
14. Van Der Maren, J.-M., *Méthodes qualitatives de recherche pour l'éducation*. 1995, Montréal: Les presses de l'Université de Montréal.
15. Liberati, A., et al., The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *British Medical Journal*, 2009. 339.
16. Moher, D., et al., Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *Annals of Internal Medicine*, 2009. 151(4): p. 264-W64.
17. Bhananker, S.M. and B.F. Cullen, Resident work hours. *Current Opinion in Anaesthesiology*, 2003. 16(6): p. 603-9.

18. Simien, C., et al., Resident operative experience in general surgery, plastic surgery, and urology 5 years after implementation of the ACGME duty hour policy. *Annals of Surgery*, 2010. 252(2): p. 383-9.
19. Wagner, M.J., et al., Duty hours in emergency medicine: Balancing patient safety, resident wellness, and the resident training experience: a consensus reponse to the 2008 Institute of Medicine resident duty hours recommendations. *Journal of Emergency Medicine*, 2010. 39(3): p. 348-355.
20. Dowling, S., et al., Extension of general practice training from three to four years: experiences of a vocational training programme in Southern Ireland. *Education for Primary Care*, 2009. 20(3): p. 167-72.
21. Gonczi, A., The development of competency-based assessment strategies for the professions / Andrew Gonczi, Paul Hager, James Athanasou. Research paper (Australia. National Office of Overseas Skills Recognition) ; no. 8., ed. J.A. Athanasou, et al. 1993, Canberra :: Australian Govt. Pub. Service.
22. Miller, G.E., The assessment of clinical skills/competence/performance. *Academic Medicine*, 1990. 65(9 Suppl): p. S63-7.
23. Taber, S., et al., Identifying the policy implications of competency-based education. *Medical Teacher*, 2010. 32(8): p. 687-91.
24. Frank, J.R., et al., Toward a definition of competency-based education in medicine: a systematic review of published definitions. *Medical Teacher*, 2010. 32(8): p. 631-7.

## Appendix 1: About the authors

All authors were involved in the study design, data gathering, data analysis and paper writing.



Dr. Joyce Maman A. D. Dogba, (MD, Health Economist, PhD Public health) has been involved in clinical, social and epidemiological research in Africa and in France. Her current research interests are human resources for health, maternal and child health, assessment of quality and performance in health systems, mixed methods studies and economic evaluations. She is currently a research assistant in the Center for Medical Education, Faculty of Medicine, McGill University, especially in charge of this commissioned paper of the FMEC project.



Dr. Mathieu Rousseau is a general surgery resident in his 3<sup>rd</sup> year of training at McGill University. He is the current President of the McGill Residents' Association (ARM) and Vice-President of the Federation of Medical Residents of Quebec (FMRQ). He is completing a Master's degree in experimental surgery and has research experience in the field of duty hours regulation and surgical education. He seats on the scientific advisory committee for the Future of Medical Education in Canada – Post Graduate project. He acted as co-lead as well as resident and specialties representative for this commissioned paper



Dr. Marion Dove, an Assistant Professor in the Department of Family Medicine at McGill University, has been Director of the Faculty Development Committee since July 2009. She holds an MD from McMaster University (1994) and did her residency in family medicine at McGill University (1996). Her family practice at the CLSC Côte-des-Neiges, one of the family practice teaching units at McGill University, includes obstetrics with deliveries at the Jewish General Hospital, and she also works as an associate and clinical teacher at the Montreal Children's Hospital in the Department of Adolescent Medicine and Gynecology. In keeping with her clinical practice, Dr. Dove's research interests include social perinatology, breastfeeding knowledge translation, and violence against women.



As a faculty member, Dr. Charo Rodríguez (MD, Ph.D) integrated McGill University in June 2003. As of June 2008, she holds the position of tenured Associate Professor in the area of Health Services and Policy Research of the McGill Department of Family Medicine. In collaboration with Danielle Groleau, Dr. Rodríguez teaches the graduate course PSYT-625 'Qualitative Research in Health Care', addressed to McGill master's and Ph.D students in health sciences interested in qualitative research approaches. Furthermore, Dr. Rodríguez has spearheaded a research portfolio in health care management and organization for which she was awarded 'Chercheur Junior 1' by the 'Fonds de recherche en santé du Québec' (FRSQ) in 2004, and 'Chercheur Junior 2' in 2008. This research agenda comprises four main axes, namely information technology, identity, inter-organizational collaboration, and program evaluation. Dr. Rodríguez is Associate Editor of the International Journal of Integrated Care and a member of the editorial board of the Management Information Quarterly journal. Among others, she has published in international journals such as BMC Family Practice, Administration & Society, the Journal of Interprofessional Care, International Journal of Integrated Care, Health Care Management Review, Healthcare Policy, and the Journal of Health Services and Policy.



Dr. Sarkis Meterissian is a Professor of Surgery and Oncology (tenured) at McGill University. He is currently the Associate Dean of Postgraduate Medical Education and Professional Affairs and a core faculty member of the Centre for Medical Education. He is also the principal investigator at McGill University for the Future of Medical Education project.

His major areas of interest in educational research include the assessment of clinical judgment and the development of novel feedback tools. He is also interested in all aspects of postgraduate medical education but particularly the integration of international medical graduates.

He is interested in the question of length of training and was involved in all aspects of this project including designing the literature review, carrying out the interviews, analyzing them and writing the final paper.

## Appendix 2: Annotated bibliography

**Bhananker, S. M. and B. F. Cullen (2003). "Resident work hours." *Current Opinion in Anaesthesiology* 16(6): 603-609.**

This narrative review summarizes the basis for, and steps taken towards, limiting work hours for resident doctors, and implications for residents, institutions, and states. Its core finding is that LoT may need to be longer if it emerges that residents' clinical skills are deficient because of fewer hours of training.

This article was retained because it is a comprehensive review article on resident duty hour regulation in the USA.

**Dowling, S., M. Rouse, et al. (2009). "Extension of general practice training from three to four years: experiences of a vocational training programme in Southern Ireland." *Education for Primary Care* 20(3): 167-172.**

This qualitative research design evaluated the experiences of trainees taking part in an extended (four year) general practice training programme introduced in the South Eastern region of the Republic of Ireland to replace the previous traditional (three-year) programme. Although the number of residents studied was small, some beneficial effects were reported, including less pressure during the additional year of training, significant professional and personal development, and increased confidence to enter into practice. Some disadvantages such as excessive time allocated to research and lack of acknowledgement of their level of seniority by teachers are reported.

This article used a sound qualitative research design and was thus retained.

**Hodges, B. D. (2010). "A tea-steeping or i-Doc model for medical education?" *Academic Medicine* 85(9 Suppl): S34-44.**

In this narrative review, opinions are expressed about the implications of both time- and outcomes-based models for medical education reform. The article also proposes an integration of the best elements from each model.

This article was included in the literature review because it highlighted the internal influence on Canadian PGME.

**Simien, C., K. D. Holt, et al. (2010). "Resident operative experience in general surgery, plastic surgery, and urology 5 years after implementation of the ACGME duty hour policy." *Annals of Surgery* 252(2): 383-389.**

This cohort study aimed to examine changes in resident surgical experience since resident work hour restrictions were implemented in 2002-3 in the USA. There was no demonstrated decrease in resident surgical volume since the implementation of resident duty hour restrictions. However, since the patterns of operative volume have changed in a complex way in the interim years, it is important to continue to study factors which could affect the operative experience of residents, especially if further restrictions on resident hours are envisaged.

We decided to retain this article in our review because of its important conclusion from a rigorous methodology, that the effects of work hour regulations on residents' volume of activities were limited.

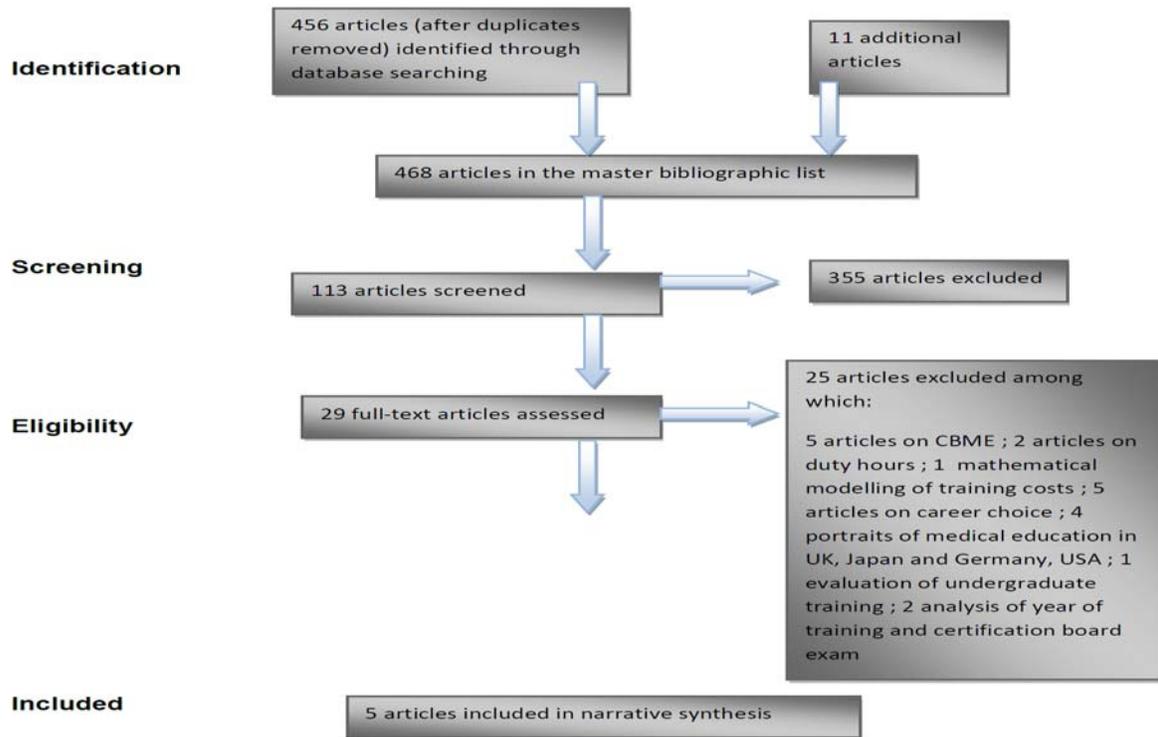
**Wagner, M. J., S. Wolf, et al. (2010). "Duty hours in emergency medicine: Balancing patient safety, resident wellness, and the resident training experience: a consensus response to the 2008 Institute of Medicine resident duty hours recommendations." *Journal of Emergency Medicine* 39(3): 348-355.**

This is a consensus report from the representatives of Emergency Medicine, in reply to the Institute of Medicine (IOM) resident duty hours recommendations. This report recalled that attainment of milestones determined by time-based indicators is the current measure of competence. Thus, since a reduction in duty hours is likely to decrease residents' activity volume, some educators (particularly in Emergency Medicine) suggested an increase in the residency LoT if the IOM recommendations were to be implemented.

We chose to include this article in the literature review because it considered an important voice, that of medical educators.

### Appendix 3: Methodology

Figure 2: Flowchart, literature review methodology and overall results



## Appendix 4: Quotes

Table 5: Illustrative quotes from key stakeholder interviews

<b>PREVALENT PARADIGMS IN MEDICAL EDUCATION</b>
<b>Manage FM and specialties as one block and not fragmented parts</b>
<i>"But another thing that I'm very challenged by is that it is a shame that there's a separate College of Family Practice from Royal College. It's all post-graduate medicine, why aren't we one? Why can't we get together? I just think that's a problem, and I think we should work on".</i> Medical educator, specialist <i>"...But clerkship is generally a series of disjointed courses".</i> Medical educator in FM
<b>Learning as a lifelong learning process</b>
<i>"It is important not think that everything will be taught in the residency program; instead we must teach our students how to learn".</i> Medical educator in FM
<b>Continuum from UGME to the context of practice</b>
<i>"How long does it take to train a family physician from the beginning of medical studies that is to say from the undergraduate level? We must think of a continuum of undergraduate to post-graduate. .... There isn't necessarily any educational continuity".</i> Medical educator in FM
<b>Interprofessional education (IPE)</b>
<i>"I think we lose more and more opportunities to interact, the experience of intra-professional collaboration, residents should experience this during residency".</i> Medical educator in FM
<b>International context</b>
<i>"I think and this is specific to internal medicine, um, really unfortunately, if you like, actually unfortunately, people who are trained in the United States and are called internists have a three-year training program. And in addition, it's very different and they are really not trained as consultants and yet they have the same name".</i> Medical educator, specialist
<b>Societal changes</b>
<i>"There is a social reality with which we must live, that is, with time, people are working less".</i> One policy decision-maker, specialist <i>"The change in values of young people who start studying medicine, who want a better work-life balance. That is something we should not only listen to, but learn from".</i> Medical educator in FM.
<b>Regulations : resident duty hour</b>
<i>"Hours spent in hospital, should be productive hours, which are dedicated to learning activities, training activities. ... And the endless hours to respond to calls that have little or no educational value, ought to be eliminated".</i> One policy decision-maker, specialist.
<b>Quality control process</b>
<i>"So, um, maybe I might say that what I think overall is that post-graduate education in Canada is kept at a very high standard, and I think it's, in addition, the standards are pushed regularly so that they improve all the time .. but of course this couldn't happen if there weren't very</i>

## PREVALENT PARADIGMS IN MEDICAL EDUCATION

*strong teachers and university programs across the country that are actually kind of delivering this activity and so that not only does the Royal College have high standards, but the universities tend to respond to those standards so that they actually maintain a high level of training education. And that's probably one of the really big strengths of our current system. Perhaps another real strength is the examination process that every residence, whether in family medicine or in specialty medicine, that they all have to do at the end of their training. And this also, the colleges work very hard on these examinations... they work very hard to make them valid as possible, so I think that is a good examination process, and it really does -- it makes the trainees really learn, I think, because of that exam".* Medical educator, specialist

### UGME educational and institutional context

*"...I think there are so many things to improve at the UGME level to ensure that when our students start residency they are more prepared and equipped to start their family medicine residency".* Medical educator in FM

### Training objectives and specialization issues

*"Our internists who work in our academic community have limited practice. ... As soon as they leave university hospitals ... they must have a much wider practice. And soon they go to a little more remote regions the internist must be qualified as a cardiologist, gastroenterologist, respirologist, [He] must master the technical skills of each of these sub-sectors of care ... Ultimately the type of practice the physician is heading towards should control the type of training he receives".* Medical educator in FM