

IHWC 2011

Author: Dr. Joshua Tepper

Emerging Challenges of Expanding Medical Workforce Supply:

The Canadian Experience

Countries are experiencing an increase in supply due to expansions in the supply of medical graduates and there are evolving issues about the short and longer term effects of more doctors. The most immediate issue is how the expansion is catered for in postgraduate training. More medium term issues can be expected to relate to affects of the expansion on health care costs, on population health, on national self-sufficiency and immigration policy, and on the potential for 'crowding out' the growth in the roles of non-medical health professionals. This paper will explore these challenges, with particular focus on postgraduate medical education.

**Historical Context and Introduction:**

Canada, like many countries, entered the 1990's with a view to reducing the medical workforce as a means of reducing burgeoning health care costs and in the belief that there was likely an oversupply of physicians. Other cost cutting measures undertaken in many Canadian jurisdictions included a reduction in the number and/or size of hospitals and decentralization of operational control and planning to achieve cost efficiencies. Specifically, in 1992/93 there was a 10% reduction in the number of medical education positions along with restrictions on the number of international medical graduates.

Within a short number of years (likely before the impact of these reductions could be realized) there was a growing concern about a shortage of physicians, particularly primary care doctors, in rural and Northern Canada. In just a few more years the problem was seen as pan-geographic affecting even the largest cities and all disciplines. The public manifestations of the shortage were lack of access to primary care physicians, long wait-times for specialist physicians and increasing levels of 'burn-out' by the existing physician workforce. Beyond the reduction in the total numbers of physicians the problems were thought to be driven by changing practice patterns of physicians and increased complexity of patient care (driven by an aging population, new technology, chronic diseases etc)

By the end of the decade significant policy work was underway to reverse the reductions to physician supply. However, efforts were made to not simply increase the number of doctors but to fundamentally re-think our approach to the medical education system and the health human workforce more broadly. This process is still underway, driven by core beliefs but also evolving in response to

the inherently dynamic healthcare system and evolving work force patterns across many professions.

This paper documents the innovative process of expansion that has occurred over approximately the last decade – and is still ongoing. The paper includes both quantitative and descriptive data.

### **Undergraduate Education and Expansion**

Canada currently has 17 Medical Schools across eight of its 13 provinces and territories. In 2009/2010, entrance class sizes ranged from 64 to 256. Three of these schools, located in the province of Quebec, offer French only programs and the Northern Ontario School of Medicine has a primary focus on rural and northern education.

Data from the Association of Faculty of Medicine of Canada indicates medical School enrollment grew steadily from 4,681 in 1968/69 to a peak of 7,128 in 1992/93. As noted above, policy decisions led to a steady decline in overall enrollment to reach a relative nadir of 6,388 in 1999/00. However since the turn of the decade unprecedented expansion led to enrollment levels of 10,518 in 2009/10 with commitments to further expansion already made. All but 294 of these positions are filled by Canadian citizens. Attrition rates are less than 1%.

The recognition of growing problems in access to care led to the realization that simply expanding numbers in the historical education model was unlikely to be satisfactory. As Albert Einstein noted: “ We cannot solve our problems with the same thinking we used when we created them”.

A critical values and policy driver of the overarching effort to rethink medical education was Canada’s adoption in 2001 of the World Health Organization’s (WHO) framework for Social Accountability of Medical Schools. In 1995 the WHO defined the social accountability obligation for medical schools as “the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and the public.” The Federal Government funded the development of Canada’s foundational document on Social Accountability and provided start-up funding to support relevant activities and change within the medical schools. Today all medical schools have incorporated Social Accountability initiatives into their core functioning. A voluntarily compiled inventory of these initiatives is housed at: <http://www.afmc.ca/social-initiatives-database-e.php>.

In 2007 the Federal Government funded the Association of Faculties of Medicine of Canada (AFMC) to lead a project entitled *The Future of Medical Education: A Collective Vision for MD Education*. Over 18 months of creation and another

year of dissemination AFMC led a pan-Canadian effort that broadly engaged stakeholders and decision makers. Grounded in the principles and practice of Social Accountability the final report offered ten recommendations:

1. Address Individual and Community Needs
2. Enhance Admissions Processes
3. Build on the Scientific Basis of Medicine
4. Promote Prevention and Public Health
5. Address the Hidden Curriculum
6. Diversify Learning Contexts
7. Value Generalism
8. Advance Inter- and Intra-Professional Practice
9. Adopt a Competency-Based and Flexible Approach
10. Foster Medical Leadership

There is already strong activity in all of these areas across the medical schools although there is often variation in approach or degree of focus. One area of consistent innovation and commitment has been interprofessional education (IPE). The Federal Government was instrumental in generating significant change in this area with the creation of a National Expert Committee on 'Interprofessional Education for Patient-Centred Collaborative Practice' from 2003 to 2007. The Committee's seminal work was then furthered by Health Canada's support of the Accreditation of Interprofessional Health Education (AIPHE) project in 2007. AIPHE focuses on six health professions: physical therapy, occupational therapy, pharmacy, social work, nursing and medicine.

In the first two years AIPHE focused on creating core principles for the development of standards for interprofessional education along with an implementation guide. In 2010, following some initial dissemination of their work, AIPHE created an Interprofessional Health Education Accreditation Standards Guide. Their work has now been shared with more than two dozen other health professions.

Medical schools have developed a wide range of class-room and clinically based educational models to support IPE. The timing of this educational movement has been appropriate as more Interprofessional Care (IPC) models are being implemented which provide important clinical teaching spaces and role models.

One area of ongoing concern in undergraduate medical education is that efforts to create greater social accountability through student selection, curriculum design and new learning environments may be at least partially undone by the increasing cost of medical school tuition. In 2010 first year tuition in Canada ranged from approximately \$3,000 to almost \$21,000 depending on school. Medical school costs are typically layered on top of at least four years of University education. The 2007 National Physician Survey suggested that

approximately one third of students anticipated a debt load of at least \$80,000 by end of training with a smaller percentage (5.5%) estimating debt at more than \$160,000. The concern is that these debt levels will discourage applicants from disadvantaged backgrounds or impact a medical student's choice of residency program. The same survey suggested that approximately 40% of students considered the impact of earning potential and debt in their decision of which post-graduate training program (and career) to pursue. Interestingly some pursued shorter programs (family medicine) in response to this pressure while others selected longer training programs but with higher earning potential. Further survey based research suggested that students attending schools/jurisdictions with higher tuition costs were less likely to come from low-income families and more likely to have financial concerns influence their career choices (profession and location).

A prime example of growth in medical education being driven by the Social Accountability mandate was the opening in 2005 of Canada's first new medical school in several decades. Located in Northern Ontario, with hubs in two cities located several hundred kilometers apart, The Northern Ontario School of Medicine had a mandate of being "in, by and for Northern Ontario". The school developed an innovative integrated curriculum that grounded its learners in more than sixty northern communities including approximately two dozen aboriginal communities. The curriculum is designed and delivered with heavy involvement of the community members. Students utilize technology to create a networked learning community that spans a geography larger than several European countries combined. In the first five years of the program more than 12,000 applicants have competed for 346 places. 91% of accepted students were from Northern Ontario including 7% Aboriginal and 22% Francophone. With an average individual Grade Point Average of 3.7, entering students are on par or above almost all other Canadian Medical Schools. On final national examinations the charter class (2009) ranked first in Canada on clinical decision making. Perhaps more importantly 100% of the students were accepted into residency positions with 2/3 in rural family medicine programs and the remainder in other general specialty programs.

While NOSM has been the only 'new' medical school, all other medical schools have embraced decentralized medical education (DME). For example the University of British Columbia has created new campuses in the north, the west and the south of the province and used technology to create a large virtual educational network among their sites. DME has posed a range of implementation challenges including the need for new capital investment, innovative use of technology and the engagement of large numbers of new physicians in the educational process. Many of these physicians had not planned on being engaged in academic careers when they established themselves outside of traditional academic health science centres. A range of new physician funding initiatives have been required to compensate for teaching

in the community and these new investments have in-turn created tensions with traditional teaching sites which had often been uncompensated for teaching or compensated in less transparent funding models.

### **Post-Graduate (PG) Education:**

Statistical data on Canada's Post-Graduate education system is collected by the Canadian Post-MD Education Registry (CaPER). CaPER is funded through a partnership of the major national Medical organizations along with contributions from Federal, Provincial and Territorial governments. Starting in 1986, the database contains longitudinal tracking for each current and previous residents and fellows who participated in a Canadian PG program. Data is compiled annually.

Canada has always ensured it has had sufficient numbers of residency positions to accommodate its graduating medical school class. Before the effort to reduce physician numbers there was typically a 1:1.1 ratio of medical student positions to PG positions. In the 1990's this ratio became much tighter with essentially a 1:1 ratio leading to more intense competition for different residency programs and less choice for medical students. With the commitment to expand undergraduate education there was a concomitant commitment to expand PG positions, often creating excess capacity at the PG level of 10% or higher. In many cases, because of the urgency to graduate more physicians the expansion of PG positions was done in advance of the need created by undergraduate medical expansion. This excess capacity is filled by International Medical Graduates or used by a jurisdiction to recruit students from medical schools in other Canadian jurisdictions.

Since 2001/02 until 2010/11 the number of first year residency position for Canadian and permanent residents has grown steadily from 1574 to 2845. The total number of trainees across all years has moved from 7,113 to 11,821. Over this time the ratio between Family Medicine positions and other specialties has been essentially unchanged at 40:60<sup>1</sup>. Also steady over this period is the ratio for of resident positions to fellowship positions for Canadian residents at 95:5.

Canada has always had International Medical Graduates (IMG) as part of the physician workforce. However, in 1992/93 a variety of restrictions on the pathways to licensure for IMG were implemented including reduced access to required PG education. The last decade has seen a reversal of that trend with the number of IMG in the first year of the PG system growing from 9% to 15% of the total available positions. There are additional positions dedicated to IMG training and assessment in the later years of the PG system as well. In total the

---

<sup>1</sup> This ratio is based on the differences in program length (Family Medicine is a two year program and other specialties five) such that ultimately the practicing physician workforce will have approximately a 50:50 balance.

number of Ministry funded positions for IMG has grown from 369 in 2001/02 to 1711 in 2010/11.

The integration of the growing number of IMG into the PG system has required dedicated programs to help with issues such as appropriate selection of IMG for PG training; orientation to the Canadian health care system; orientation to the Canadian Medical Education system; and preparation of faculty to provide culturally competent supervision. Despite these efforts there is anecdotal and quantitative evidence to suggest that many IMG are not performing as well in the PG system and are requiring more extensive support than their Canadian trained peers. In recognition of these factors, in at least one Canadian jurisdiction, the Medical Schools are provided a higher level of funding for IMG PG positions by the provincial government relative to Canadian PG positions.

Behind this growth in absolute capacity have been a number of significant discussions about the structure of Canada's PG system. The Social Accountability mandate for medical schools includes the PG system and some of the same trends have been seen in terms of creating more community based education. There are a large number of Rural Family Medicine programs across the country and a range of other smaller rural general specialty programs in areas such as psychiatry and general surgery. More recently there has been development of small global health agendas and a small number of programs that focus on the needs of inner-city and urban marginalized populations. Overall PG expansion has focused significantly on Family Medicine.

However one of the areas of perceived threat to the social accountability mission is the growing move towards sub-specialization for both Family Medicine and other specialties. Family medicine residents are increasingly pursuing an additional third year of organized training in areas such as sports medicine, women's health, anaesthesia, emergency medicine, palliative care, care of the elderly and academic medicine. The number of government funded third year positions was 128 in 2001/02 and last year (2010/11) was 237 across the country. However many of the third year positions are not Ministry funded. Similarly Royal College sub-specialty positions also reached a record high last year of 369 ministry funded sub-specialty positions but this number is grossly underestimated and does not include fellowship positions. Non-Ministry positions can be funded through a range of other sources including private sector sponsorship, physician practice-pools, research dollars and self-funded by the resident who at this stage of training has a full practice license. Even beyond sub-specialization there is a strong trend for specialization in medical and surgical disciplines to occur immediately after medical school with a large number of specialty areas becoming 'direct entry' from medical school rather than additional training that follows a 'broad based' general or medical training program.

The concerns about this trend are multiple and date back to the mid-1990's. Medical students have expressed concern about having to make decisions very early in their education that will lead them into a narrow career path and residents express concern about a lack of flexibility to change this career path if they decide for personal or professional reasons that their chosen path is incorrect. From a systems perspective there is concern that we are not training physicians with the type of generalist skill sets needed in large parts of the country outside of large urban areas – a process that runs counter to the tenants of social accountability. Even within large urban areas the specialization leads to the need for a greater number of physicians available to provide services<sup>2</sup>. There is also concern about whether the workforce is being trained in a manner to be flexible over time in the face of changing societal needs or evolving technology or medical knowledge.

Understanding these concerns and developing potential solutions has been the focus numerous conferences and policy efforts since approximately 1996. The most significant of these efforts was a joint project by the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada called the Core Competency Project. Starting in 2006, the project concluded in 2009 with a report based on national research, international scanning, consideration of potential models and very broad consultation.

In brief, the study did not find data to support the concerns about early career decision making by medical students while acknowledging that some stress is inevitable as people make significant decisions. Overwhelmingly data suggested students were happy with their career decisions and that most physicians along the career spectrum were content with their choices. To that end recommendations were made to create career mentorship and career information sharing as well as support opportunities for broad based experiences in medical school.

---

<sup>2</sup> A personal anecdotal story offers insight into this risk. This author was working in a rural emergency room on the weekend and saw a young man with a significant fracture of his elbow that would require surgical attention. He called the 'local' academic health sciences centre and asked for the on-call orthopaedic service. The service agreed the case needed to be seen promptly but deferred the case to the 'hand and upper limb' team on-call. However that service was covered by a plastic surgeon who would not take the patient because he was not technically comfortable. He explained there were not enough hand/upper limb orthopaedic surgeons to cover the call schedule so plastic surgery helped but was unable to cover the range of clinical services offered by the orthopaedic team. The orthopaedic service continued for several hours to refuse the patient explaining they were not responsible for who covered the hand and upper limb service.

In looking at the flexibility of the PG system to accommodate changes in career paths the study found that almost 4 in 10 residents had considered changing careers and almost 1 in 3 physicians in practice. The number of individuals who have taken the next steps(s) in terms of meeting with University leadership is much less and the total number of switches per year (either switching between training programs or re-entering training from established practice is consistently low). The report also documented that despite perceptions a significant degree of flexibility exists (some program and regional variation exists) to accommodate those who are interested. The challenge for established physicians to switch career tracks extends beyond availability of residency positions to issues of cultural acceptance, remuneration levels, impact on community health service delivery, return of service obligations etc. Recommendations in the report included developing a national registry to raise awareness of all the capacity that exists and collaboration between the two colleges and within the colleges look to facilitate switching by providing more 'credit' for training that has been completed at time of switching.

Another key recommendation in the report is that the Royal College look to expansion of their current categories for specialty recognition without impacting the need to develop generalism among the specialties. To this end Royal College has announced several new categories of recognition in addition to their historical "primary specialty" and "sub-specialty" designation: Fundamentals program, Area of Focused Competence (Diploma) program and Specialist Interest Group for Medical Activity. A brief description of each is found in the Appendix. The Fundamentals program is based on models in Australia and the United Kingdom which use foundational or pre-vocational educational programs. The Diploma program is similar to Canada's College of Family Physician "Enhanced Skills Program" in areas such as Emergency Medicine.

The greatest level of discussion in the report focused on whether the core structure of the PG education system should be redesigned to facilitate generalism and reduce the trend to specialization. The specific proposal in question was for the Royal College to create a small number (approximately eight) core programs in surgery and medicine that most residents would start with before pursuing specialty<sup>3</sup>. The final report rejected the proposal, proposing instead that the attainment of generalist competencies and perspectives would be attained throughout the educational continuum starting in medical school. Instead the report suggested exploring competency based education (CBE). CBE is currently being integrated in the United States and delineates a move towards outcome based assessment rather than time-based credentialing. It allows a clear focus on societal needs in a manner that allows the best use of PG

---

<sup>3</sup> This proposal was seen a compromise to the proposal to return to a common first year of training for essentially all residents that had been developed and rejected in 2003.

resources. As noted in the report moving to CBE would be "...a paradigm shift in how education, training and assessment is conceived and implemented in all professional domains, at all levels of education and training and in jurisdictions worldwide"

Following this 2009 report Canada's PG system is once again undertaking broad self-scrutiny and discussion. The Federal Government has asked AFMC to continue the Future of Medical Education Project outlined above by moving from the undergraduate medical curriculum to the post-graduate. This project is well underway and started by accepting the recommendations of the medical school document as a starting point. In addition to approximately eighteen policy papers on key topics, dozens of consultations have occurred across Canada and internationally. Emerging themes include: the role of technology; the need for interprofessional training; looking at the governance relationship between governments, Universities and hospitals; and leadership development.

An important trend that is now influencing the discussions about the structure of Post-Graduate education is the growing focus on Resident work hours and the issue of patient and provider safety. The issue has already been brought to the forefront in Europe by the European Working Time Directive and in the United States the Institute of Medicine of the National Academies 2008 Report *Resident Duty Hours: Enhancing Sleep, Supervision, and Safety*. In June 2011 an Arbitrator in the Province of Quebec gave the province's hospitals six months to eliminate the 24-hour on-call shifts that currently exist. The Arbitrator was ruling against a large Academic Hospital after a grievance was filed by the resident. The arbitrator said that the existing practice was against the Canadian Charter of Human Rights. Since June a new contract has been voluntarily negotiated between the Resident Association and the hospitals which limits shifts to 16 hours. This ruling and the subsequent contract will almost certainly have a ripple effect across the country as other contracts are negotiated and/or other grievances are filed. There is a growing body of study and policy discussion generated within Canada looking at this issue. For example this year's Canadian Conference on Physician Health is hosting a debate with international participation with the resolution: Physicians (and trainees) should be subject to restrictions on their work hours in the same way that pilots and truck drivers are.

New approaches to staffing, the use of other providers and compensation will likely be needed. For example, one General Internal Medicine program which had already eliminated 24 hour shifts reported needing 20% more residents to provide the same level of service.

### **System Issues and Impact:**

---

The rapid expansion of the UG and PG system and the innovations in the model of educational delivery are well underway. However the ultimate impact on the system are uncertain and difficult to predict. Provinces and territories are engaged in increasingly sophisticated workforce data collection and modeling. However the models still have significant limits in being able to predict the impact of factors such as new team based models of care, evolving technology and changing practice patterns of many professions and the disciplines within professions. Despite the national nature of the health education system and the increasing mobility of health providers much of the modeling is done at the provincial/territorial level. This allows better granularity of the data but may blunt a broader vision or sophisticated modeling. Several national medical organizations have called for the development of a Pan-Canadian workforce observatory to increase the capacity for workforce planning.

Beyond the countries borders the new Health Care legislation introduced in the United States is being watched with interest. If fully implemented the changes will provide health care coverage for a currently uninsured population that is larger than the population of Canada. The United States is already facing a shortage of health care providers and there are concerns about strong recruitment pressures on Canada's workforce although there is no evidence to support the concern to-date.

## Appendix: Description of new Royal College Categories of Discipline Recognition

**Fundamentals Program:** A fundamentals program is a primary core curriculum of fundamental competencies in a domain of medicine, and is the common training for several related disciplines to build upon. It is a post-MD discipline intended to prepare a physician for further advanced training and, in contrast to a primary specialty, does not normally prepare for practice or lead to certification in itself.

**Diploma Program:** An area of focused competence is a highly focused discipline of specialty medicine that addresses a legitimate societal need, but does not meet the criteria for a specialty, fundamentals program or subspecialty. Typically diploma programs represent either a supplemental competency that enhances the practice of a physician in an existing discipline, or a highly specific and narrow scope of practice that does not meet the criteria of a sub-specialty.

**Specialist Interest Group for Medical Activity:** An emerging area of interest in specialty medicine or community of practice that addresses a legitimate societal need without a widespread role in healthcare. SIGMA serve to provide a forum for individuals with a common area of interest to come together to discuss the evolution of their discipline. This category is not considered a formally recognized discipline of the Royal College.

This appendix is pulled from the Royal College FAQ Handout New Categories of Discipline.

---