

Supply versus demand: a review of application trends to Canadian surgical training programs

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SUMMARY

Despite increases in medical school enrolment, applications to surgical residency programs in Canada have been in decline over the past decade, with an increasing number of unmatched surgical residency positions. We examined the current status of surgical residency in Canada and analyzed application trends (2002–2013) for surgical training programs across Canada. Our findings suggest that most undergraduate medical schools across Canada are having difficulty fostering interest in surgical careers. We propose that a lack of adequate early exposure to the surgical specialties during undergraduate training is a critical factor. Moving forward, we must examine how the best-performing institutions and surgical programs have maintained interest in pursuing surgical careers and adapt our recruitment methods to both maintain and grow future interest. As Mary Engelbreit said, “If you don’t like something, change it; if you can’t change it, change the way you think about it.”

The Royal College of Physicians and Surgeons of Canada recently reported that 16% of newly graduated specialist physicians are unable to find employment, sparking debate over the supply–demand balance of specialist physicians across Canada.¹ Though this debate remains unresolved from a societal viewpoint, there is another important, yet rarely discussed perspective, shaping the future of health care in Canada: the graduating medical student entering the workforce.

The supply of Canadian medical graduates has never been higher; there were 2827 graduates in 2014 compared with 1255 graduates in 2002. However, demand for surgical residency positions has declined for more than a decade. Data from the Canadian Resident Matching Service (CaRMS; www.carms.ca/en/data-and-reports) shows that the number of students selecting a surgical specialty as their first choice has dropped to its lowest point since CaRMS began reporting statistics (13.0% in 2014 v. 20.8% in 2002). During the same time period, despite a 260% increase in the number of residency training positions, family medicine experienced an 18.9% average increase in first choice applications. Compare this to urology, which witnessed a 1.2% decrease in first choice applicants, equating to 34 fewer applicants per year in a specialty with only 31 residency training positions nationwide.

Potentially more concerning is that the students currently applying to surgery may be less competitive applicants. The CaRMS data reveal that the average number of unmatched surgical residency positions has been increasing over the past 6 years, peaking in 2009 with 27 unmatched surgical residency positions across Canada. The quality of applicants has dropped to the point where programs would rather leave a position unmatched than accept a candidate.

There has been a decrease in interest in our plastic surgery program at the University of Toronto, which has prompted the question: Does this trend affect only our program, only plastic surgery programs across the country, or is it a phenomenon afflicting all surgical programs?

To examine the current status of Canadian surgical training, we analyzed application trends to the 6 largest surgical specialties (Table 1). We divided the data set

in half (2002–07 and 2008–13) and compared averages from these 2 periods. Trends were further analyzed based on the academic institution from which applicants graduated (Appendix, Tables S1 and S2, available at canjsurg.ca).

Unfortunately, there is no pervasive and uniform pattern to surgical applications across Canada (Appendix, Table S1); however, of 78 programs examined, 63% experienced a decrease in first choice applicants. Furthermore, 85% experienced a decrease in at least 3 of 6 surgical specialties, and no institution experienced an increase in the number of first choice applicants for all specialties.

Why does this concerning trend exist? How can we improve?

Though one may presume that future employment concerns are the driving force contributing to this ebb in surgical interest, the literature is inconclusive regarding the impact of job opportunities on career selection. Another theory is that medical graduates today are of a generation increasingly opting for lifestyle-centered careers.² The current generation (Generation Y, born between 1982 and 2005) has grown up and thrived in a closely supported environment, protected from failure, where teamwork has replaced hierarchy.² This differs greatly from traditional surgical training, which may deter the Generation Y student from a surgical career. However, the concept of a generation gap is not new. Rohrich³ highlighted many of these same challenges in a discussion on the difficulties of training surgeons from Generation X (born between 1961 and 1981). It seems that any time there is a transition between generations, intergenerational conflict rooted in resistance toward change develops. It is how one bridges this gap that determines success moving forward.

Interestingly, our data set overlaps the transition period from Generation X to Generation Y. One can easily conceive that between 2008 and 2013 the proportion of Generation Y students graduating from medical school was increasing as Generation X numbers decreased. Though convenient to blame the mindset of a new generation of physicians, if this were simply a generational effect one would expect minimal variability among geographic locations and academic institutions and a more uniform, pervasive pattern.⁴

Although certainly multifactorial, we believe the key determinant of interest in a surgical career is adequate

exposure. Studies have shown that early exposure to surgical specialties has a positive influence on career choice.⁵ Unfortunately, in 2010–11 our institution reduced the amount of time that medical students spend on core surgical rotations from 12 to 8 weeks. Alongside duty hour restrictions, call limitations and decreased surgical teaching in medical school, students now receive much less surgical exposure than their predecessors. For example, only 3 hours of teaching is devoted to plastic surgery topics within the current 4-year curriculum at the University of Toronto. It is, therefore, not surprising that plastic surgery at our institution experienced one of the largest overall application decreases nationwide. How can a student become interested in a specialty when the curriculum essentially overlooks it?

Moving forward, the next step would include analyzing surgical teaching curricula at the institutions fostering greater interest in surgical careers to determine what sets them apart. Perhaps there is greater exposure to surgery and more involved surgical role models touting surgery as a rewarding career. Furthermore, we should survey the students themselves to determine their perceived exposure, which can differ from reality if the students lack a thorough understanding of a specialty's scope of practice. We may also benefit from a better understanding of what students desire from us as surgical educators.

So how can we improve the horizon for surgical training in Canada? While the first step is to admit a problem exists, the next step is for surgeons to develop creative solutions to maintain interest in our specialties. Creativity and progressive thinking is exactly what the fast-paced, multitasking Generation Y student demands. Though seemingly counterintuitive, we must shed the competitive stigma associated with surgical residency before demand drops so low that we become, in essence, obsolete.²

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Table 1. National data from the CaRMS match for surgical specialties (comparing 2008–2013 to 2002–2007)

Surgical specialty	Δ Average no. residency training positions	Δ Average no. first choice residency applications
General surgery	+26.00	-0.8%
Neurosurgery	+2.17	-23.1%
Orthopedic surgery	+27.50	-4.6%
Otolaryngology	+11.50	-16.1%
Plastic surgery	+11.17	-15.3%
Urology	+11.33	-18.0%

CaRMS = Canadian Resident Matching Service.