The Class of 1989 and post-MD training

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Abstract

Background: "The Class of 1989" is a longitudinal study of 1722 people who were awarded an MD degree by a Canadian university in 1989. This paper reports on the details of their post-MD training up to spring 1996.

Methods: Several medical professional and educational associations in Canada and the United States provided year-by-year information on field and location of post-MD training, certification achieved, whether in practice and location of practice through to spring 1996. Information from all sources was linked to a list of 1989 medical school graduates.

Results: Of the 1722 graduates 57 (3.3%) never entered post-MD training in Canada; 147 (8.5%) did 1 or more years of training in the United States. A total of 222 graduates (12.9%) took a break of at least 1 year from training, and 301 (17.5%) changed their choice of field or specialty after starting training. Substantial numbers took 1 or more years longer to complete training than would be expected based on the prescribed length of the training program chosen. The field or specialty choices of the cohort produced a generalist:specialist ratio of 58:42. The final numbers in several fields depended heavily on trainees changing their initial career choice.

Interpretation: The data point out widely differing and often very long lead times from start to completion of training. Since 1993, changes to licensure requirements have reduced opportunities for recent graduating cohorts to delay final career choices, take a break in training, prolong training or change initial career choices. Rigidities in the post-1993 training environment point to the emergence of a number of serious problems, such as dissatisfaction and high anxiety levels among residents, licensing authorities being faced with people who have not completed a training program to certification, and insufficient provision of positions for post-MD training because of underestimates of the time needed to complete training programs. The insights gained from this study lead to the recognition that planning the specialty distribution of the physician workforce is highly complex and difficult.

Résumé

Contexte : «La promotion de 1989» est une étude longitudinale portant sur 1722 personnes qui ont reçu un diplôme en médecine d'une université canadienne en 1989. Ce document présente des détails sur la formation postdoctorale reçue par les intéressés jusqu'au printemps de 1996.

Méthodes : Plusieurs associations professionnelles des milieux de la médecine et de l'éducation du Canada et des États-Unis ont fourni de l'information annuelle sur le domaine de la formation postdoctorale, le lieu où elle a été reçue, les certificats obtenus, et ont indiqué si l'intéressé exerçait la profession et où il le faisait, jusqu'au printemps de 1996. On a rapproché l'information de toutes les sources et une liste de diplômés de 1989 des facultés de médecine.

Résultats : Sur les 1722 diplômés, 57 (3,3 %) n'ont jamais entrepris de formation postdoctorale au Canada; 147 (8,5 %) ont fait un an ou plus de formation aux États-Unis. Au total, 222 diplômés (12,9 %) ont pris une pause d'un moins un

Evidence

Études

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an et 301 (17,5 %) ont changé de spécialité après avoir entrepris leur formation. Beaucoup de diplômés ont pris au moins un an de plus qu'on s'y attendait pour terminer leur formation compte tenu de la durée prescrite du programme de formation choisi. Les choix de domaine et de spécialité de la cohorte ont produit un ratio de généralistes:spécialistes de 58:42. Les chiffres définitifs dans plusieurs domaines étaient liés étroitement aux stagiaires qui changeaient leur choix de carrière initial.

Interprétation : Les données indiquent des périodes très différentes et souvent très longues entre le début et l'achèvement de la formation. Depuis 1993, les modifications des exigences relatives à l'obtention du permis d'exercice ont réduit les possibilités pour les cohortes qui viennent d'obtenir leur diplôme de retarder leur choix de carrière final, de prendre une pause au cours de la formation, de prolonger leur formation ou de changer leur choix de carrière initial. Les rigidités du contexte de la formation d'après 1993 signalent l'apparition d'un certain nombre de problèmes graves comme l'insatisfaction et un niveau d'anxiété élevé chez les résidents, les ordres qui font face à des personnes qui n'ont pas terminé un programme de formation préparatoire au certificat et l'insuffisance du nombre de postes de formation postdoctorale parce qu'on a sous-estimé le temps nécessaire pour terminer les programmes de formation. Les aperçus dévoilés par cette étude obligent à reconnaître que la planification de la répartition des effectifs médicaux entre les spécialités est extrêmement complexe et difficile.

At least since 1962 it has been accepted in Canada that the number of places for the study of medicine should bear some relation to physician requirements.[1] It was not until much later that planners became interested in linking the distribution of post-MD training positions to specialty requirements as determined by physician workforce plans.

In an accompanying article (page 723) we report on the geographic distribution and contribution to physician numbers of the Class of 1989, 7 years after these graduates earned the MD degree at a Canadian university. In this article we focus on the post-MD training experience of the Class of 1989 and what can be learned from it in relation to issues arising in the planning of the specialty mix of the Canadian physician workforce. The key issues covered are the proportion of the graduating cohort that entered post-MD training in Canada, the number of years of training taken in Canada and other countries, specialty choice, changes in career choices, interruptions in training and lead times to practice for specialists and subspecialists.

Methods

The cohort methodology used to study the Class of 1989 is described in the accompanying article (page 724). Briefly, year-by-year information on all those who graduated from Canadian medical schools in 1989 was obtained from several medical professional and educational associations in Canada and the United States. The following is additional information specific to the recording of data on post-MD training.

For each of the 7 training cycles, 1989–90 to 1995–96 inclusive, we determined whether each of the 1722 people who earned an MD degree in 1989 was in training in or outside Canada. A training cycle commences in July of one year and ends in June of the next year. A full training cycle is referred to as a year of training.

For each year in training we recorded the field of training, the level of training (rank) and the university or country of training. Thus, a longitudinal training record was built up for each graduate. From this record initial and final field or specialty choices were coded, interruptions or breaks in training were computed, and number of years of training and location of training were recorded.

The following are definitions of some of the terms used in this study. A break in training refers to an absence of at least 1 year from post-MD training. A break implies that a graduate was in training in 2 or more years and that there was a gap of at least 1 year between any 2 years of training. The length of training is the sum of all years of post-MD training taken by the graduate whether the training took place in Canada or elsewhere. We report average duration in years of training for each specialty and subspecialty. Averages include years in fellowship training but not years of training following the 1995–96 training cycle.

A set of guidelines was developed to determine whether a graduate had changed field or specialty after starting a program of post-MD training. The guidelines were based on patterns of post-MD training and were arrived at after studying the usual paths of training for specific specialties. For example, a move from a rotating internship program to any specialty program without a

break in training was not considered a change in field or specialty because the rotating internship was an acceptable first year for any specialty training program. A full description of the guidelines is available on request.

The initial field or specialty was assigned based on the field of training of the earliest year(s) of training. The final field or specialty was coded on the basis of the graduate's entire longitudinal record. For example, a physician who had done only 1 year of training in a comprehensive surgical internship and had not taken any other training following that year would have been assigned surgery as the initial career choice but general practice as the final field or specialty. For most physicians the field of certification was used as a check on the assigned final field or specialty. For physicians still in training in 1995–96 the field of training in that year was taken as the final field or specialty.

Results

Location of training

Of the 1722 graduates 57 (3.3%) never entered post-MD training in Canada: 5 did no training at all (they abandoned medicine immediately on graduation), and 52 did all their post-MD training outside Canada (Table 1). Of the 1665 graduates who did post-MD training in Canada, 96 (5.8%) also did at least 1 year of training in the United States. Almost 1 in 10 graduates (8.5%) did some or all of their clinical training in the United States.

Breaks in training

A total of 222 graduates (12.9%) were absent from training for at least 1 year. Of the 222, 71 (32.0%) did not change field of residency training after the break, and 151 (68.0%) entered a different field on return to training.

The absence from training was mostly of 1 or 2 years' duration, but some graduates returned to training after intervals of 3, 4 or 5 years. There may be some now in practice who returned or who will yet return to training after 1995–96, the last year for which data were available.

Length of training as a function of field or specialty of training

Table 2 shows how long it took the graduates to complete various training programs compared with minimum required times. Fields or specialties are grouped by minimum duration of program to completion so that the actual averages can be compared with the minima.

The 344 graduates whose final career choice was general practice had 1.2 years of training on average. Of the 344 graduates 282 had completed exactly 1 year of training.

Those who entered family medicine had 2¼ years of training on average. One in 5 family physicians (127/592) had trained for more than 2 years.

For those who chose a specialty or subspecialty, with the exception of internal medicine (general), pediatrics (general) and anatomical pathology, the average time taken to completion was about 1 year longer than the minimum required time.

Of particular interest are the freestanding medical specialties, some of which required a minimum of 4 years to completion and some 5 years. The actual average time taken for both groups was 5¼ years.

Table 2 gives the average length of training up to and including the 1995–96 training year. The averages will increase slightly, particularly for the surgery programs with a minimum duration of 6 or 7 years, as most of the trainees in these fields had not yet completed training by 1995–96.

Table 1: Number of years (to spring of 1996) and country of post-MD training of the 1722 people awarded an MD degree by Canadian medical schools in 1989

Total no. of years of training	Country of training; no. (and %) of graduates				
	Canada only	Canada and United States	United States only	Never in training	Total
0	NA	NA	NA	5	5
1	280	0	2*	NA	282*
2	522	4	0	NA	526
3	109	7	23	NA	139
4	90	13	7	NA	110
5	290	21	9	NA	320
6	182	18	4	NA	204
7	96	33	7	NA	136
Total	1569 (91.1)	96 (5.6)	52 (3.1)	5 (0.3)	1722 (100.0)

Note: NA = not applicable.
*Includes 1 graduate who trained in a country other than the United States.

Changes in career choice

This study identifies the fields of medicine that gained or lost physicians as a result of changes in career choices. A total of 301 graduates (17.5%) changed their chosen field or specialty (Table 3). Most changes were from a more general to a more specialized field of practice: 170 graduates of the 301 who made a change went from general practice or family medicine to a specialty. The net effect of the changes is shown for each field or specialty.

Career changes made a significant contribution to the final numbers in some fields of medicine. Of the larger specialties, anesthesia, neurology and psychiatry gained a large proportion of their final numbers as a result of career changes. The same was true for some small specialties, such as community medicine, emergency medicine, physical medicine and radiation oncology.

Seventy (4.1%) of the graduates abandoned a specialty or family medicine training pathway before completing certification requirements.

Overall specialty mix

Table 4 shows the final career choice of the graduates according to location in 1995–96 (in Canada or outside Canada). For the graduates in Canada the numbers are further broken down for those in practice and those in training. Fields in which substantial numbers of physicians were still in training 7 years after graduation fall into 2 categories: those with long training programs and those that depend heavily on re-entrants from practice for recruitment. A separate analysis of the adequacy of the numbers in each specialty or subspecialty is beyond the scope of this article.

A high proportion (878/1516 [57.9%]) of the graduates who were in practice or in training in Canada in 1995–96 were in general practice or family medicine; 638 (42.1%)

Table 2: Average number of years of post-MD training taken by the graduates of 1989 compared with minimum duration of training programs*

Field or specialty	Minimum duration, yr	Actual average duration, yr†	No. of graduates *n = 1717*
General practice	1	1.20	344
Family medicine	2	2.24	592
Internal medicine and pediatrics			
General	4	4.22	87
Subspecialties	5	5.96	159
Other medical specialties			
Dermatology, neurology, nuclear medicine, physical medicine, radiation oncology	4	5.23	60
Anesthesia, community medicine, diagnostic radiology, emergency medicine, medical genetics, psychiatry	5	5.25	202
Laboratory medicine			
General pathology, medical biochemistry, medical microbiology	4	5.17	17
Anatomical pathology	5	5.08	13
Surgery			
Ophthalmology, otolaryngology	4	5.00	60
General surgery, neurosurgery, orthopedics, plastic surgery, urology, obstetrics/gynecology	5	5.76	164
Colorectal, critical care, general surgical oncology, pediatric general surgery, thoracic, vascular	6	6.89	9
Cardiothoracic and subspecialties of obstetrics/gynecology	7	6.80	10

*Minimum durations are those at the time the graduates started training. Some durations have changed since then.
†Average number of years of training up to 1995–96 includes internship, residency and fellowship training. Some graduates will continue to train in subsequent years.

were in a specialty. The full specialty profile includes nearly all specialties and subspecialties for which certification is available in Canada.

Interpretation

Some background information is essential to commenting on the data related to post-MD training of the Class of 1989.

Medical school graduates enter post-MD training to qualify for licensure to practise medicine. For those who graduated in 1989, in all provinces except Quebec and Alberta, it was still possible to obtain a licence to practise general medicine after only 1 year of training. In Quebec licensure was obtainable only through certification in family medicine or a specialty. In Alberta 2 years of training was the minimum requirement for licensure, but certification in family medicine was not obligatory. Since that time licensure requirements have changed. As of 1994, with very few exceptions, licensure in all provinces is granted only following certification in family medicine or a specialty.

The existence of rotating internships in all provinces except Quebec made it relatively easy for members of the Class of 1989 to change their field of post-MD training after starting training. Graduates could earn a general licence following a 1-year internship, practise for a while and then return to specialty training. Another alternative for those who were not sure which field of medicine to enter was to take a year of rotating internship and make a career decision during the first year of training.

The changes to licensure and residency training requirements, particularly the elimination of the rotating internship, have resulted in a very much reduced opportunity for current graduates (post 1993) to delay career decisions, take breaks in training or extend the length of time in training. Our data provide a basis for estimating how many residents would potentially take advantage of such options were they available to current cohorts of graduates.

A break in training was taken by 13% of the graduates

Table 3: Effect of changes in choice of field or specialty on final specialty distribution of the graduates of 1989

Field or specialty	No. of graduates					Effect of net change*
	Initial field or specialty	Changed from (loss)	Changed to (gain)	Net change	Final field or specialty	
General practice	461	−119	+2	−117	344	−
Family medicine	615	−58	+34	−24	591	−
Anesthesia and subspecialties	24	−5	+33	+28	52	+++
Community medicine	2	−1	+10	+9	11	+++
Dermatology	4	0	+4	+4	8	+++
Diagnostic radiology and subspecialties	37	−2	+20	+18	55	++
Emergency medicine	3	0	+8	+8	11	+++
Internal medicine and subspecialties	191	−53	+41	−12	179	−
Medical genetics	0	0	+1	+1	1	•
Neurology	10	−1	+13	+12	22	+++
Nuclear medicine	7	−2	+1	−1	6	•
Pediatrics and subspecialties	70	−10	+7	−3	67	•
Physical medicine and rehabilitation	5	0	+8	+8	13	+++
Psychiatry and subspecialties	46	−3	+30	+27	73	++
Radiation oncology	4	0	+7	+7	11	+++
Laboratory medicine specialties	21	−8	+17	+9	30	++
Cardiothoracic surgery	3	0	+1	+1	4	•
General surgery and subspecialties	69	−25	+13	−12	57	−
Neurosurgery	8	−1	+3	+2	10	+
Obstetrics/gynecology and subspecialties	40	−6	+11	+5	45	+
Ophthalmology	32	−2	+13	+11	43	++
Otolaryngology	14	−2	+5	+3	17	+
Orthopedic surgery	34	−2	+9	+7	41	+
Plastic surgery	8	0	+5	+5	13	++
Urology	9	−1	+5	+4	13	++
Total	1717	−301	+301	0	1717	

*Judgements were made relative to the size of the field (i.e., numbers entering each field of medicine) rather than in absolute terms. • = too few cases to make judgement or insignificant net change; + = gained somewhat (< 26%); ++ = gained much (26% to 74%); +++ = gained very much (≥ 75%); − = lost somewhat (< 26%).

Table 4: Final career choice of the graduates by location in 1995–96

Field or specialty	Location; no. of graduates*				
	In Canada			Outside Canada	Total
	In practice	In training	Subtotal		
General practice	325	1	326	15	341
Family medicine	552	0	552	36	588
General medicine, subtotal	*877*	*1*	*878*	*51*	*929*
Anesthesia and critical care (anesthesia)	29	17	46	6	52
Community medicine	5	3	8	3	11
Dermatology	6	2	8	0	8
Diagnostic radiology	27	19	46	9	55
Emergency medicine (specialty)	7	1	8	3	11
Internal medicine (general)	28	5	33	13	46
Internal medicine subspecialty					
Cardiology	10	12	22	2	24
Clinical immunology/allergy	4	1	5	0	5
Critical care	4	3	7	5	12
Endocrinology	4	1	5	1	6
Gastroenterology	6	3	9	1	10
Geriatric medicine	3	2	5	0	5
Hematology	5	5	10	3	13
Infectious diseases	2	2	4	3	7
Medical oncology	4	1	5	1	6
Nephrology	8	0	8	6	14
Respiratory medicine	9	3	12	4	16
Rheumatology	7	2	9	4	13
Medical genetics	1	0	1	0	1
Neurology (adult and pediatric)	8	3	11	11	22
Nuclear medicine	6	0	6	0	6
Pediatrics (general)	25	6	31	8	39
Pediatric subspecialties	9	15	24	4	28
Physical medicine and rehabilitation	10	3	13	0	13
Psychiatry and subspecialties	47	21	68	3	71
Radiation oncology	9	1	10	1	11
Medical specialties, subtotal	*283*	*131*	*414*	*91*	*505*
Anatomical pathology	10	2	12	1	13
General pathology	5	1	6	2	8
Medical biochemistry	3	0	3	0	3
Medical microbiology	4	2	6	0	6
Laboratory medicine specialties, subtotal	*22*	*5*	*27*	*3*	*30*
Cardiothoracic surgery	0	4	4	0	4
General surgery	18	23	41	7	48
Surgical subspecialties	0	7	7	2	9
Neurosurgery	3	6	9	1	10
Obstetrics/gynecology and subspecialties	26	10	36	9	45
Ophthalmology	28	3	31	12	43
Otolaryngology	13	1	14	3	17
Orthopedic surgery	18	18	36	5	41
Plastic surgery	6	5	11	2	13
Urology	6	2	8	5	13
Surgical specialties, subtotal	*118*	*79*	*197*	*46*	*243*
Total	1300	216	1516	191	1707

*Excluding the 15 graduates who were inactive in 1995–96.

of 1989. The most frequently encountered reasons for which trainees take breaks (e.g., maternity leave, health problem or need to earn money before continuing training) are common to all cohorts of graduates. A system that is so rigid that breaks cannot be accommodated is bound to cause considerable hardship to sizeable numbers of graduates.

We found that in many cases the final career decision was made after post-MD training had started. One in 6 graduates changed their field or specialty after having started training, and another 4% abandoned a training program before certification.

Since 1994 the number of entry-level post-MD positions has been set provincially to approximate the number of graduating medical students each year. With little or no slack in the system, the opportunity to change from one training program to another is limited to openings created by residents vacating a position in a training program.

The inability to alter choice of field or specialty may greatly affect recruitment to the fields of medicine that have been dependent on career choices made only after 1 or more years of post-MD training. The data identified anesthesia, community medicine, dermatology, diagnostic radiology, emergency medicine, neurology, physical medicine and rehabilitation, psychiatry, radiation oncology, laboratory medicine, ophthalmology, plastic surgery and urology as such fields.

Currently, trainees who do not complete a training pathway all the way through to certification will ordinarily not be eligible for a general licence. Inevitably, there are going to be graduates who will find themselves in these circumstances. The possibility that up to 4% of Canada's medical graduates may be ineligible for licensure because certification was not achieved must be considered a potential problem looming on the horizon for licensing authorities. In Quebec, which has been dealing with this matter for a longer time, the opportunity to transfer to family medicine is offered to all specialty residents. A solution of this kind may yet need to be envisaged by other provinces.

We found that, for a variety of reasons, a substantial minority of graduates took longer than expected to complete training. Policy discussions on the provision of positions for post-MD training have relied on prescribed minimum times to completion of training to decide on numbers. The fact that residents take longer than expected to complete training has implications for the cost of post-MD training as a result of the increased number of years in which each trainee is in the system and, hence, the greater number of training positions required to educate a cohort to certification. Planners need to allow for longer time lags from commencement to completion of training when projecting annual outputs of physicians in various fields.

The choices of field of our cohort produced a physician supply heavily weighted toward general practitioners/family physicians. In recognition of the need to train more specialists than generalists in order to bring the practice ratio to 50:50, the allocation of post-MD training positions was altered, so that starting with the 1994–95 training cycle only 40% of the graduates of Canadian medical schools entering training for the first time entered generalist training programs, whereas 60% entered specialty training.[2] Even with the implementation of this policy, it will take many years for the practice ratio to approach 50:50, given the long lead times from entry to completion of specialty training programs and the slow turnover in the number of practising physicians each year.

Nearly 1 in 10 members of the Class of 1989 did at least 1 year of post-MD training in the United States. This finding is consistent with information about location of first post-MD year of training from the Association of Canadian Medical Colleges's annual survey of graduating students.[3] Policy-makers need to keep in mind the availability of training opportunities in the United States. They are an integral part of the spectrum of choices open to graduates of Canadian medical schools. Attempts to regulate and "micromanage" the choices of new graduates may encourage some of them to seek training in the United States as an alternative to entering or completing a training program in Canada for which they feel unsuited.

Finally, the data from this cohort study point out the complexities that must be faced in planning the supply and specialty mix of the physician workforce.

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