

INTERPROVINCIAL AND INTERNATIONAL MOBILITY OF THE 1989 COHORT OF PHYSICIANS WHO EXITED FROM CANADIAN POST-M.D. TRAINING PROGRAMS

D. Thurber, MA, Director, CAPER

L. Buske, BSc, Chief, Physician Resources Information and Planning, CMA

BACKGROUND

There have been very few studies conducted at the national level that have followed the movement of physicians following completion of training.

A 1994 study by McKendry et al¹, surveyed physicians who had at one time practiced in Canada but had since relocated their practice to the United States. As well, the study polled physicians who had remained in Canada. The findings indicated that doing any amount of postgraduate training in the U.S. was a strong determinate for locating there in the future. Professional factors rated as most important in the decision to move to the U.S. or stay in Canada were: professional/clinical autonomy, availability of medical facilities and job availability. Level of remuneration was a factor that was considered equally important by both groups.

The most significant personal reason for those emigrating was geographic climate; for those remaining in Canada it was relatives and educational opportunities for children.

Because the study surveyed a random sample of all expatriate physicians with a U.S. address, the time period over which physicians made the decisions to move spanned many decades.

A cohort study of the 1989 Canadian medical graduating class, conducted by Ryten et al², identified the location of each graduate and whether or not they were in training or out in practice. The study found that 7 years after graduation, the cohort remaining in Canada was reduced by approximately 12% to 1529 physicians. Of these, most were out in practice but 12.5% were still in training and 0.8% were inactive. The study reported only on the two time periods so presumably some physicians may have received postgraduate training outside the country and returned to Canada to practice.

The Canadian Institute for Health Information³ produces annual statistics on the migration of physicians by specialty, age, years since graduation, place of graduation, etc. As well, they track the number of physicians returning to Canada to active practice. The data represent an aggregate look at the flow of both Canadian and foreign trained physicians who at one time had a licence to practice in Canada.

This study concentrates on physicians who were already practicing medicine by tracking, over a 10 year period, those physicians who exited Canadian postgraduate training programs in 1989. Analyses have been done at three separate time periods – 2 years, 5 years and 10 years after they exited postgraduate training. Both movement into and out of Canada and movement between provinces was studied.

METHOD

Table 1 shows the number and proportion of the physicians in the 1989 exit group cohort who were located in Canada at 2, 5, and 10 years after exit from training. At two years after

The database of the Canadian Post-M.D. Education Registry (CAPER) was used to select the 1989 exit cohort which was “tracked” in this study. The CAPER database consists of the individual records of post-M.D. trainees registered each year in all Canadian training programs. This information has been provided annually to CAPER since 1987 by the offices of Postgraduate Medical Education at the 16 Canadian Faculties of Medicine under a confidentiality policy requiring that identifiable individual information is not released from CAPER. The exit group consisted of all graduates of Canadian medical schools who were registered for post-m.d. (residency) training in Canada on November 1, 1988 and who had left training by November 1, 1989 (graduates of foreign medical schools who trained in Canada were not included in the data). The vast majority of these physicians would have left training in July, 1989, although few would have left at other times throughout the year. Only those physicians who had exited at a rank level consistent with completion of training in a rotating internship, family medicine or a specialty were included in the exit group being studied. This restriction was made to ensure that residents who were simply taking a temporary break in training would not be included in the cohort of exiting physicians. Practice locations for the 1714 physicians were obtained from the masterfile of the Canadian Medical Association (CMA) at 3 time periods; 2 years (1991), 5 years (1994), and 10 years (1999) after the physicians left post-M.D. training. Practice locations were recorded between July and the end of August in each of the three years. This data set therefore includes 3 “snapshots” of the practice locations for each record. Other information used in the analysis such as gender had been provided as on the initial CAPER submissions.

Record matching to the CMA masterfile was done using a unique identifier. A code for the province or country of the practice locations for the 3 time periods was added to the CAPER database. If no practice location was available on the CMA masterfile, the physician was listed as “not located”. Home addresses were not used. The residency training variables used in this study were: 1) the Faculty of Medicine which awarded the M.D. degree and the province in which it was located; 2) gender of the trainee; 3) the final training field of the residents in the cohort, and the Faculty of Medicine responsible for the last year of residency training and the province in which that faculty was located.

RESULTS

1. The proportion of the exit group which was located in Canada in each time period

exit from training, we were able to locate 94% of the group in Canada. Five years after completion of training 92% remained in Canada and by 10 years after training, 89% of

the original exit group of Canadian graduates was located in Canada. It should be remembered that the exit group consisted of graduates of Canadian medical schools who had done their residency training in Canada. By 1999, there were 27 physicians for whom no practice address could be determined from the CMA masterfile. It is most likely that they were practising medicine outside of Canada or that they were not practising clinical medicine.

2. Detailed description of movement of the cohort between Canada and the United States

Because practice location information at these three time periods was used in this analysis, we were able to examine the movement of the cohort to and from Canada and the United States over the 10 year period. The United States is the main destination of Canadian physicians who leave the country, although it will be clear from other tables that not all of the physicians located outside Canada were in the United States.

Table 2 describes the movement of these physicians between the 2 and 5 year exit periods. At two years after leaving training in Canada, there were 94 physicians (5.5% of the exit group) from the cohort who were located in the United States. Three years later (5 years after exiting training), we found that 25 of these had returned to Canada.

However, an additional 48 physicians from the original cohort had gone to the United States. There was a net increase of 23 physicians (for a total of 8.5% of the Canadian graduates) over the three year time period (between 2 and 5 years after exit) in the number of physicians located in the United States.

In the next 5 years (between 1994 and 1999), 18 of the 117 physicians in the United States moved back to Canada (Table 3). However, 54 more went to the United States for a net increase of 36 physicians: that is an increase of 30% over the 117 physicians who were there in 1994.

To summarize, in 1999 (Table 4), 62 (66%) of the original 94 physicians from the post-M.D. exit cohort who were in the United States were still there. In addition, 91 more physicians had moved to the United States over the next 8 years, so that by 1999, 153 physicians from this cohort were in the United States. This is 9% of the full exit group. The flow to the USA was relatively constant over the 10 year period with 48 physicians going in the first 5 years after exit from training and 54 going in the next 5 years. Returns to Canada were slightly higher in the first 5 years (25) than they were in the next five years (18).

These data provide us with an interesting picture of the flow of physicians from one exit cohort between Canada and the United States. Although this movement would most certainly continue beyond the 10 year period, physicians who emigrate as well as those who return to Canada are heavily represented by those who are 15 years or less from receiving their undergraduate medical degree (in 1998, 70% of physicians emigrating - 63% of those returning came from this group according to CIHI³).

For example, Newfoundland went from having 31 physicians from this group located there in 1991 to having 20 eight years later. Nova Scotia retained 73 of the 84 who originally located there. Provinces which gained physicians over the

3. Other variables related to mobility between 1991 and 1999 of the 1989 post-M.D. exit cohort

For this part of the analysis, mobility was defined as any change in **province or country** of practice location between two and ten years after exit from training.

a) Mobility of the whole group

Of the 1714 physicians in this group, 333 (19%) changed practice locations in the 8-year period between 1991 and 1999 as given in Table 5.

b) Field of post-M.D. training

Table 5 shows the proportion of physicians from each training field who changed practice location. Family physicians were a more mobile group than specialists; 24% of the family physicians changed province or country of practice while only 15% of specialists did so. Looking within the specialty groups, we find that the medical specialists were the least mobile of all groups with only 11% changing practice locations. Surgical specialists, laboratory medicine specialists and medical subspecialists were more mobile with about 20% changing practice locations in the 8 year period.

c) Citizenship

There was no significant difference in the mobility of Canadian citizens and citizens of other countries who had earned their medical degree in Canada.

d) Gender

There was no significant difference in the mobility of men and women (17% of women and 21% of men changed practice provinces/countries in the 8-year periods).

e) Language of instruction

Physicians who trained in the three faculties of medicine where the language of instruction is French were much less likely to be mobile (6%) than those from the English language faculties (22%).

f) Province during post-M.D. training

The province of post-M.D. training for this exit group was significantly associated (χ^2 , <.000 2-sided test) with mobility between 1991 and 1999. Physicians who trained in Newfoundland were the most mobile with 44% changing practice locations. Those who trained in the Maritimes (39%), Saskatchewan (35%) and Manitoba (24%) were more mobile than the national average (19%). Physicians who trained in Alberta (19%), Ontario (18%), British Columbia (17%) and Quebec (10%) were less mobile than the national average.

4. Interprovincial mobility of the 1989 exit group between 1991 and 1999

Table 6 gives the full picture of interprovincial geographic mobility of this exit group between 2 and 10 years after exit from training. For most provinces there was a net loss of physicians from this cohort over that time period.

time period were Alberta and British Columbia. Both Quebec and Ontario maintained over 90% of those who originally were located there. PEI and the Yukon territories both had increases although the total numbers are very

small.

5. Province in which the m.d. degree was earned and the last province of post-M.D. training predictors of practice location 10 years after exit from training

Table 7 shows the retention 10 years after exit from training of the physicians who earned the M.D. degree in each province. In British Columbia (85/114) and Quebec (285/406), over 70% of the M.D. graduates in this cohort were in the province 10 years later in this cohort. Ontario had retained 420 of its 629 (67%) M.D. graduates.

All provinces, to a varying degree also “gained” physicians from the M.D. graduates of other provinces. The main beneficiaries from other provinces were British Columbia, Alberta and the Maritime Provinces. British Columbia had more than doubled the number of physicians from its own 1989 graduating class by physicians moving to BC from other provinces. Although all Dalhousie graduates locating in the Maritimes were considered to be “Maritime” graduates, Quebec and Newfoundland graduates were not counted as Maritime graduates even though New Brunswick has funded medical education in Newfoundland and Quebec.

Table 8, similarly shows the “losses” and “gains” to each province from the groups of physicians who completed training in each province. Again, all provinces both “lost” and “gained” physicians over the 10 year period. Manitoba, the Maritime Provinces and Saskatchewan experienced having many of their trainees move away, but they also gained physicians from other provinces post-M.D. trainees. British Columbia stood out as it had a high retention of its own trainees but also attracted physicians from other provinces.

CONCLUSIONS

This cohort based study described in detail the movement of Canadian physicians between provinces and to the USA up to ten years after they left post-M.D. training in 1989. Over a 10-year time period, there was a gradual move of 9.5% of the physicians to locations outside Canada (mainly the United States). Altogether, 19% of the physicians moved between provinces or outside the country in the 8-year period between 1991 and 1999. Provinces which gained the most from this movement were Alberta and British Columbia. British Columbia was by far the most common destination for physicians within Canada. As British Columbia has the smallest number of positions for medical education relative to its population, it is not surprising that physicians from other provinces find employment opportunities there. Also, Alberta and British Columbia are provinces that have had increases in total population over the last 10 years.

Over the 10 year time period studied, all provinces both gained physicians from other provinces and had their trainees and graduates move away. Provinces which retained the highest proportion of their trainees and M.D. graduates were Quebec, Ontario, Alberta and British Columbia. Also, the Maritime provinces retained over 50%

of their post-M.D. trainees and Manitoba retained 56% of its M.D. graduates. As a proportion of its own graduates, all provinces added to their practice pool from the M.D. graduates of other provinces. British Columbia gained the most from this phenomenon with the in-migration of 127 M.D. graduates from other provinces, thus doubling the physician workforce provided by its own graduates. Although the Maritime provinces also gained physicians from other medical schools, some would have had their medical education funded by the province of New Brunswick.

The time period discussed in this paper was a time of unprecedented upheaval in health care provision in all provinces. Both Ontario and Alberta underwent major hospital restructuring activities with hospitals being both closed and consolidated. As a result it was an unstable working situation for all physicians especially the new physicians studied in this paper. Thus, the mobility of this cohort may prove to be much greater than one would expect in a more stable working environment. The general pattern of physician mobility, however is similar to that seen in the 1989 M.D. graduates studied previously by Ryten et al².

Given this high degree of mobility of the Canadian physician workforce, it is certainly logical that physician supply be studied at the national level. Mobility is a fact of life and should be reinforced so that all provinces can benefit from the education and unique training opportunities provided in all parts of the country. Fortunately, barriers to mobility such as differential licensure and education requirements among the provinces are rare, and thus a very mobile workforce has been maintained. However, they are not completely absent and should certainly be discouraged if the country is to obtain the most benefit from this highly trained labour sector. In a country with a relatively small population, the full range of training experiences is only available on a national basis. If citizens of all regions of Canada are to benefit from all our unique training programs, physicians must be able to move with ease to practice anywhere in the country.

REFERENCES

- 1 McKendry, RJR et al: Factors Influencing the Emigration of Physicians from Canada to the United States. CMAJ 1996;154:171-181.
- 2 Ryten E, Thurber AD, Buske L. The Class of 1989 and Physician Supply in Canada. CMAJ, March 24, 1998;158(6);723-728
- 3 Supply, Distribution and Migration of Canadian Physicians, 1999. Institute for Health Information, Ottawa, 2000.

Table 1

**Practice Location of the 1989 Exit Cohort* of Post-M.D. Trainees
At 2, 5, and 10 Years After Exit From Training**

Location	Number of years after exit from post-M.D. training		
	2 years (1991)	5 years (1994)	10 years (1999)
Located in Canada	1605 (94%)	1577 (92%)	1523 (89%)
Located in USA or another country	100 (5.9%)	125 (8.5%)	164 (9.5%)
Not located	9 (.4%)	12 (.7%)	27 (1.6%)
Exit group total	1714 (100%)	1714 (100%)	1714 (100%)

* Physicians who earned the M.D. degree in Canada and exited Canadian post-M.D. training programs in 1989 at a rank level which would be acceptable for certification in the individual physicians training program

Table 2

**Movement To And From Canada and the United States of America
Between 2 and 5 Years After Exit
(1991 to 1994) of the 1989 Post-M.D. Exit Cohort**

Total 1989 exit cohort	Physicians in USA 2 years after exit (1991)	Physicians in USA 5 years after exit (1994)	Physicians staying in USA between 1991 and 1994	Physicians returning to Canada	Physicians going to USA	Total gain to USA between 2 and 5 years after exit
N = 1714	N = 94	N = 117	N=69	n = 25	n = 48	n = 23

Table 3

**Movement To And From the United States of America
Between 5 and 10 Years After Exit
(1994 to 1999) of the 1989 Post-M.D. Exit Cohort**

Total 1989 exit cohort	Physicians in USA 5 years after exit (1994)	Physicians in USA 10 years after exit (1999)	Physicians staying in USA between 1994 and 1999	Physicians returning to Canada	Physicians going to USA	Total gain to USA between 5 and 10 years after exit
N = 1714	N = 117	N = 153	N=99	n = 18	n = 54	n = 36

Table 4

**Movement To And From the United States of America
10 Year Summary
(1991 to 1999) of the 1989 Post-M.D. Exit Cohort**

Total 1989 exit cohort	Physicians in USA 2 years after exit (1991)	Physicians in USA 10 years after exit (1999)	Physicians staying in USA between 1991 and 1999	Physicians returning to Canada	Physicians going to USA	Total gain to USA between 2 and 10 years after exit
N = 1714	N = 94	N = 153	N=62	n = 32	n = 91	n = 59

Table 5

**Post-M.D. Trainees Exiting in 1989
(Canadian M.D. Graduates at Completion of Training)
Field of Post-M.D. Training (Specialty Groupings)
By**

Practice Location Change (Province or Country) Between 1991 and 1999

Field of post-M.D. training	Same	Different	Total
Family Medicine	645 (76%)	199 (24%)	844 (100%)
Medical Specialties	363 (89%)	46 (11%)	409 (100%)
Medical Subspecialties	122 (80%)	31 (20%)	153 (100%)
Lab Medicine	36 (80%)	69 (20%)	45 (100%)
Surgical Specialties	215 (82%)	48 (18%)	263 (100%)
Subtotal All Specialties	736 (85%)	134 (15%)	870 (100%)
Total	1381 (81%)	333 (19%)	1714 (100%)

Table 6

**Interprovincial Mobility Between 1991 and 1999
of the 1989 Post-M.D. Exit Cohort**

Province	Number of physicians from the 1989 exit cohort located in each province in 1991	Number of physicians from the 1989 exit cohort located in each province in 1999	Change	
			#	% (loss- or gain+ from 1991 location)
Newfoundland	31	20	-11	-36%
Nova Scotia	84	73	-11	-13%
Prince Edward Island	2	4	2	...
New Brunswick	45	38	-7	-16%
Quebec	325	305	-20	-6%
Ontario	614	562	-52	-8%
Manitoba	72	65	-7	-10%
Saskatchewan	37	26	-11	-30%
Alberta	173	179	6	4%
British Columbia	217	247	30	14%
Northwest Territories	3	2	-1	...
Yukon	2	2	0	...
Total (Canada)	1605	1523	-82	-5%*

... numbers too small to present meaningful proportions

* this is the 5% who left Canada in that time period

Table 7

**The Number of M.D. Graduates Located in the Province in Which
the M.D. Degree Was Earned
10 Years After Exit From Post-M.D. Training in 1989
(Practice Location in 1999 - CMA Masterfile)**

% Retention at 10 Years After Exit From Post-M.D. Training

Province	Number in the exit cohort who received the M.D. degree in each province	Number of graduates in each province after 10 Years	Additions from other provinces over 10 years	Total from national cohort in province after 10 years	Proportion who earned the M.D. degree in another province
Newfoundland	63	18	2	20	10%
Maritime Provinces	119	66	49	115	43%*
Quebec	406	285	20	305	7%
Ontario	619	420	142	562	25%
Manitoba	113	49	16	65	25%
Saskatchewan	72	18	8	26	30%
Alberta	208	114	65	179	36%
British Columbia	114	85	162	247	65%
Northwest Territories	--	--	2	2	--
Yukon	--	--	2	2	--
Total	1714	--	--	1523	--

* Dalhousie was considered as the medical school serving all Maritime provinces. Physicians who graduated in Quebec or Newfoundland and located in the Maritimes were considered as coming from another province

Table 8

**The Number of Exiting Post-M.D. Trainees Located in the
Province of Post-M.D. Training
10 Years After Exit from Training in 1989
(Practice Location in 1999, CMA Masterfile)**

Province	Number exiting from post-M.D. training in 1989	Number located in the province of training 10 years later	Additions from the post-M.D. exits of other provinces	Total in province in 1999	Proportion who completed post-M.D. training in another province
Newfoundland	52	11	9	20	45%
Maritime Provinces (Dalhousie)	118	56	59	115	51%
Quebec	351	272	33	305	11%
Ontario	711	474	88	562	16%
Manitoba	91	51	40	65	61%
Saskatchewan	57	13	13	26	50%
Alberta	183	110	69	179	38%
British Columbia	151	120	127	247	51%
Northwest Territories	--	--	2	2	100%
Yukon	--	--	2	2	100%
Total	1714	--	--	1523	--

* Dalhousie was considered as the medical school serving all Maritime provinces. Physicians who completed training in Quebec or Newfoundland and located in the Maritimes were considered as coming from another province