

Patterns of practice among older physicians in Ontario

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Abstract

Background: Policy-makers interested in the supply of doctors in Canada have recently begun focusing attention on older physicians. This study informs the policy debate by analysing the practice patterns of Ontario physicians aged 65 years and over.

Methods: A cross-sectional and longitudinal analysis of physician claims data for fiscal years 1989/90 through 1995/96 was conducted. The number of full-time equivalent (FTE) physicians by age category, urban or rural status, and specialty was calculated by means of an established method, and differences between older physicians, established physicians and recent graduates (in practice for 5 years or less), in terms of the types of services provided and patients seen, were examined.

Results: The proportion of FTE physicians aged 65 or more increased from 5.3% to 7.0% during the study period, whereas the proportion of recent graduates decreased from 19.6% to 16.3%. Of the older physicians, 61.4% practised part time (less than 1 FTE). Half of the physicians aged 75 in 1989/90 were still in practice 6 years later. Older physicians were less likely than those under age 65 to practise obstetrics (4.6% v. 16.9%), provide emergency department services (1.1% v. 14.8%) or house calls (38.7% v. 60.4%), or perform many minor procedures (38.7% v. 62.3%) ($p \leq 0.001$ for all comparisons). Older physicians tended to be male and had older patients in their practices than did younger physicians. Rural regions had higher proportions of older specialists.

Interpretation: Ontario's physician corps is aging. This may result in decreasing availability of obstetrics and emergency department coverage in the future. Encouraging retirement may create more openings for recent graduates, but if such policies are enacted, special attention should be paid to ensure that rural communities and older patients continue to be served.

Résumé

Contexte : Les stratèges qui s'intéressent à l'offre des médecins au Canada ont commencé récemment à concentrer leur attention sur les médecins plus âgés. Cette étude éclaire le débat stratégique, car on y analyse les tendances de la pratique chez les médecins de l'Ontario qui ont 65 ans ou plus.

Méthodes : On a réalisé une analyse transversale et longitudinale des données sur les demandes de paiement présentées par les médecins au cours des exercices 1989/1990 à 1995/1996. On a calculé le nombre d'équivalents à plein temps (EPT) de médecins selon la catégorie d'âge, l'exercice de la profession en milieu urbain ou rural et la spécialité en utilisant une méthode établie. On a examiné aussi les différences entre les médecins âgés, les médecins établis et les nouveaux diplômés (qui exercent depuis 5 ans ou moins) en ce qui concerne les types de services fournis et les patients reçus.

Résultats : La proportion des médecins EPT âgés de 65 ans ou plus est passée de 5,3 % à 7,0 % au cours de la période d'étude, tandis que celle des nouveaux diplômés est tombée de 19,6 % à 16,3 %. Des médecins âgés, 61,4 % exerçaient à temps partiel (moins d'un EPT). La moitié des médecins qui avaient 75 ans en 1989/1990 exerçaient encore 6 ans plus tard. Les médecins âgés étaient moins susceptibles que ceux qui ont moins de 65 ans d'exercer l'obstétrique (4,6 % c. 16,9 %), de dispenser des services d'urgence (1,1 % c.



Evidence

Études

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14,8 %), de faire des visites à domicile (38,7 % c. 60,4 %) ou d'exécuter de nombreuses interventions mineures (38,7 % c. 62,3 %) ($p \leq 0,001$ pour toutes les comparaisons). Les médecins âgés avaient tendance à être de sexe masculin et à avoir des patients plus âgés que les jeunes médecins. Les régions rurales comptaient des pourcentages plus élevés de spécialistes plus âgés.

Interprétation : L'effectif médical de l'Ontario vieillit, ce qui peut entraîner une réduction de la disponibilité de services d'obstétrique et d'urgence. L'incitation à la retraite peut augmenter les débouchés pour les nouveaux diplômés, mais si de telles politiques sont appliquées, il faudra s'assurer plus particulièrement que les communautés rurales et les patients âgés continuent d'être desservis.

The question "How many doctors do we need?" has long plagued policy-makers and the physician establishment in North America. In Canada the supply of physicians expanded in the late 1960s and early 1970s in anticipation of population growth and the increased demands of a new, publicly funded health insurance system.^{1,2} However, slower-than-expected population growth, in the absence of adjustments to the number of medical student positions, led to a steady increase in the physician/population ratio until the 1980s.^{2,3} Although these issues were acknowledged as early as the late 1970s, it was not until the 1991 Barer–Stoddart report on physician human resources⁴ that policy-makers began making a concerted effort to reduce the national supply of physicians.

At present, however, most measures aimed at controlling physician supply have been targeted toward young physicians. In recent years young physicians have been subject to billing number restrictions, reductions in payments and limits on interprovincial mobility.⁵ Critics argue that targeting only young physicians deprives the public of access to the people best educated in cost-effective, evidence-based medicine and retards the entry of women into the profession. Furthermore, there could be a physician shortage if physician supply policies continue to be directed toward the young.^{6,7}

Some provinces have begun focusing their attention on older physicians. Nova Scotia and Quebec have implemented retirement buy-out packages for older physicians,⁸ and British Columbia has introduced mandatory retirement at age 75.⁹ These policies are controversial; some critics argue, for example, that retirement buy-outs tax younger physicians in order to provide their older colleagues with an end-of-practice bonus, at a time when the latter would have retired anyway.⁸

The purpose of this study was to analyse in detail the practice profiles of older physicians in Ontario. What types of services do older physicians provide? What kinds of patients do they serve? How much activity do they engage in and for how long? Where are they located? This analysis is intended to shed light on existing retirement patterns and their implications for patient care. The findings could also help in designing retirement buy-outs or

other initiatives for managing physician supply targeted toward older doctors.

Methods

We examined Ontario Health Insurance Plan data for fiscal years 1989/90 through 1995/96 from the National Physician Database, maintained by the Canadian Institute for Health Information. We also used this database in preliminary analyses on the activity of older physicians.¹⁰ The database records, for each fee-for-service physician, the number of services billed and the payment received for each fee code, as well as the physician's age, sex, postal code of practice and specialty. The services performed by the 5% of physicians practising under alternative payment plans were excluded (Paul Brochu, Ontario Ministry of Health: personal communication, 1995). The database also records, for each fee code, the total number of services provided per year by patients' age and sex.

We classified physicians according to the concentration of specialists in their immediate vicinity. Both specialists and general practitioners/family physicians (GP/FPs) were assigned to the nearest hospital, defined as the hospital with a postal code closest to the physician's postal code. If, after assignment, a hospital had only GP/FPs or fewer than 3 specialists, these physicians were designated as rural. Physicians were also classified into 3 categories representing different stages of practice: age 65 or older, recent graduates in practice for 5 years or less, and established physicians (under age 65 and not recent graduates).

To evaluate the level of activity of individual physicians, we adopted Health Canada's definition of full-time equivalent (FTE),¹¹ whereby a physician is assigned an activity weight of 1 if his or her billings lie between the 40th and 60th percentile for the given specialty. If billings are below the 40th percentile, the weight is the billings divided by the 40th percentile. If billings are above the 60th percentile, the weight is the natural log of billings divided by the 60th percentile. For certain analyses we also used a categorical definition of activity level in which full time was defined as FTE of 1 or greater, part time as FTE of 0.2 or above but less than 1, and minimally active as FTE less than 0.2.



To evaluate billing patterns over time, we constructed a cohort of physicians aged 65 or more billing in 1989/90 and followed them forward for 6 years. We then observed the moment of retirement, when current and future billings became zero. This analysis permitted us to calculate “attrition” curves (the proportion of physicians still in practice over time). We also examined changes in FTE activity level over time, comparing older physicians retiring in 1995/96 with older physicians remaining active throughout the study period. For this comparison we applied direct age–sex standardization to the measurement of average FTE for both of these groups, to account for differences in age–sex structure between retirees and nonretirees. The nonretirees were used as the standard population group.

Attrition curves based on a 1989/90 physician cohort may be criticized on the grounds that physician behaviour may have changed in the last several years. We therefore used a second method, based on a life-table analysis,¹² to measure expected years until retirement at various ages. We observed the natural 1-year attrition rates during more recent years, between 1992/93 and 1995/96. These 1-year attrition rates at various ages can be used to estimate the attrition over time for a theoretical cohort of physicians.

We compared older physicians with those under age 65 in terms of their likelihood of performing obstetric deliveries, house calls and minor procedures and providing emergency department services. For this analysis, physicians had to bill a minimum number of services per year to qualify for performing the service (1 for obstetrics, 100 for emergency department services, 12 for house calls, and at least 12 sutures of lacerations, incision or drainage procedures, or excision of lesions for minor procedures).

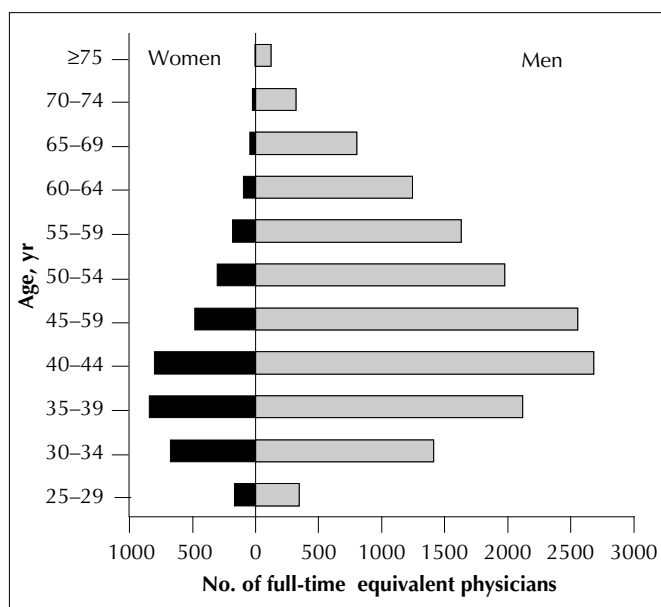


Fig. 1: Number of full-time equivalent physicians in Ontario in fiscal year 1995/96 by sex and age.

Results

General characteristics on cross-sectional analysis

In 1995/96 there were 20 149 fee-for-service physicians in Ontario, of whom 2055 (10.2%) were aged 65 or more. The number of FTE doctors was 18 841, of whom 1321 (7.0%) were aged 65 or more (Fig. 1). Only 77 (5.8%) of older FTE physicians were women, compared with 2642 (18.3%) for established physicians and 908 (29.5%) for recent graduates. A total of 549 (41.5%) of older FTE physicians were foreign graduates, compared with 4203 (29.1%) for established physicians and 497 (16.0%) for recent graduates.

The proportion of FTE physicians aged 65 or more was 6.2% for GP/FPs and 7.3% for specialists. Internal medicine and subspecialties had the lowest proportion of older physicians (5.5%), and the highest proportions were found in general surgery and surgical subspecialties, pediatrics and diagnostic imaging (all 9.1%). In rural areas 18.8% of FTE specialists were aged 65 or more, significantly higher than the proportion in urban areas (7.5%) (2-tailed *t*-test, *p* = 0.002). However, there was no significant difference

Table 1: Life table showing expected number of years until retirement for Ontario physicians based on observed attrition between fiscal year 1992/93 and fiscal year 1995/96

Age, yr	Probability of retirement next year, %	No. still in practice*	Expected no. of yr until retirement
60	2.8	1000	13.0
61	2.1	972	12.4
62	2.1	952	11.6
63	2.7	932	10.9
64	4.9	907	10.2
65	5.1	863	9.7
66	7.0	818	9.2
67	6.7	761	8.8
68	6.1	710	8.4
69	7.3	667	7.9
70	8.8	618	7.5
71	9.7	564	7.2
72	11.0	509	6.9
73	10.9	453	6.7
74	11.0	404	6.4
75	11.1	359	6.2
76	10.1	320	5.9
77	13.5	287	5.5
78	13.0	248	5.3
79	16.9	216	5.0
≥ 80	17.2	—	—

*Number of a theoretical cohort of 1000 physicians aged 60 who will still be practicing at a given age, calculated as follows. If *p_i* is the probability of retirement at age *i*, then the number of physicians still in practice at age *i* is *L_i*, calculated as *L_{i-1}* (1 - *p_{i-1}*).

†Calculated¹² as $L_i \sum_{j=i+1}^{\infty} L_j + 0.5$.



between rural and urban areas in the proportion of FTE GP/FPs aged 65 or more (6.5% v. 5.7%; $p = 0.33$).

Table 1 shows the annual attrition rate by age, based on observed attrition from 1992/93 to 1995/96. As expected, the annual attrition rate increased with increasing age, from 2.8% at age 60 to 11.1% at age 75. On the basis of a life table constructed from these attrition figures, we calculate that for physicians practising at age 75, one-half would still be practising in 6 years' time.

Physicians aged 65 or more tended to enter a transient period of part-time practice before retirement. In 1995/96 only 38.6% of these doctors were practising at full-time status, compared with 69.4% of physicians aged 55 to 64. Many older physicians continued practising at a minimal level of activity instead of retiring: 12.0% of physicians aged 65 to 74 were in this category, as were 34.6% of those aged 75 or more.

Practice profiles at various ages

Compared with physicians under age 65, older doctors billed more of their services for patients age 65 and over (30.1% v. 24.3% of billings) ($p \leq 0.001$) and fewer for children (5.9% v. 9.3%). The proportion of billings for female patients, however, was similar between the two groups (58.0% v. 58.5%). Among GP/FPs, older physicians were less likely than those under age 65 to perform obstetric deliveries (4.6% v. 16.9%), house calls (38.7% v. 60.4%) and minor procedures (38.7% v. 62.3%) and provide emergency department services (1.1% v. 14.8%) ($p \leq 0.001$ for all comparisons). Older GP/FPs, however, derived a higher proportion of their billings from performing surgical assists than did those under age 65 (2.5% v. 0.9%).

Trends over time in practice patterns

The percentage growth in the number of FTE physicians was highest for those aged 65 or more (Table 2). Over the study period the proportion of FTE physicians in this age group rose from 5.3% to 7.0%, whereas the proportion who were recent graduates declined from 19.6% to 16.3%. The aging of the physician population was particularly noticeable among GP/FPs: in this specialty the number of FTE recent graduates actually declined by 16.8%.

These changes can be traced to an analysis of doctors' entry into and exit out of various age groups over time (Fig. 2). For each year of the study period there was a steady net increase in the number of older physicians. The inflow and outflow for established physicians varied from year to year, but in all years entry exceeded exit. For recent graduates, in most of the earlier years the number exiting only slightly exceeded the number entering, but in both 1994/95 and 1995/96 there was a net exit of about 400 physicians per year.

We compared the activity level of physicians active throughout the study period with that of physicians who retired in 1995/96. The retirees had an activity level in 1989/90 that was lower by 0.17 FTE than that of the nonretirees. From 1989/90 to 1994/95 the activity level of the retirees also decreased more rapidly than did that of the nonretirees (by 0.052 v. 0.039 FTE per year) ($p = 0.02$).

Fig. 3 shows attrition curves for 4 ages. The median time to retirement for physicians aged 75 in 1989/90 was approximately 6 years, consistent with the time to retirement predicted by the life-table analysis.

Table 2: Change in number of physicians by age category between fiscal year 1989/90 and fiscal year 1995/96*

Group†	Fiscal year 1989/90			Fiscal year 1995/96			% change		
	No. of physicians	No. of FTEs	Mean FTE	No. of physicians	No. of FTEs	Mean FTE	No. of physicians	No. of FTEs	Mean FTE
Specialists									
Recent graduates	1996	1627	0.82	2113	1674	0.79	5.9	2.9	-2.8
Established physicians	5732	6068	1.06	6627	7051	1.06	15.6	16.2	0.5
Older physicians	707	416	0.59	1124	726	0.65	59.0	74.6	9.8
GP/FPs									
Recent graduates	2581	1688	0.65	1192	1404	0.70	-22.8	-16.8	7.8
Established physicians	6524	6665	1.02	7362	7392	1.00	12.8	10.9	-1.7
Older physicians	768	486	0.63	931	595	0.64	21.2	22.5	1.1

Note: FTE = full-time equivalent, GP/FP = general practitioner/family physician.

*Data for number of FTEs and mean FTE in 1989/90 and 1995/96 have been rounded, but percentage change was calculated from unrounded data.

†Recent graduates were those who had been in practice for 5 years or less; established physicians were those under age 65 and not recent graduates; older physicians were those age 65 or older.



Interpretation

Between 1989/90 and 1995/96 the proportion of FTE physicians aged 65 or more in Ontario rose, whereas the proportion of young physicians declined. This occurred despite the fact that the province has been receiving a dis-

proportionate share of Canada's new medical graduates.¹³ There are many plausible explanations for this finding. To date, most policies for managing physician supply have been aimed at young physicians. Measures implemented include a 10% reduction in medical school enrolment across the country,^{14,15} restrictions in practice location, reductions in fees for physicians starting practice and limits on interprovincial mobility for recent graduates.⁵ Not surprisingly, the sharpest decline in entry of recent graduates into the workforce occurred in 1994/95, when several of these policies were introduced. Faced with dwindling opportunities to establish practice in their home provinces, many young physicians are considering or choosing practice opportunities in the United States instead.^{13,16}

What is the potential effect of aging of the physician population on quality of care? Studies in other jurisdictions have shown that young physicians are more likely than older physicians to adopt recommended practices in health promotion and disease prevention,¹⁷⁻²⁰ to adhere to guidelines for prevention of diabetic complications²¹ and to avoid inappropriate prescribing in nursing homes.²² Our study cannot verify any of these findings in the context of Ontario but does raise the question of whether older physicians practising at a minimal activity level have the critical volume of practice necessary to maintain competence.

The growing proportion of older physicians may have consequences for access to health care services. Older physicians see a lower proportion of young patients and are much less likely to be women. Encouraging early retirement and creating more openings for recent graduates, a higher proportion of whom are women, may enhance patient access to female physicians. Older

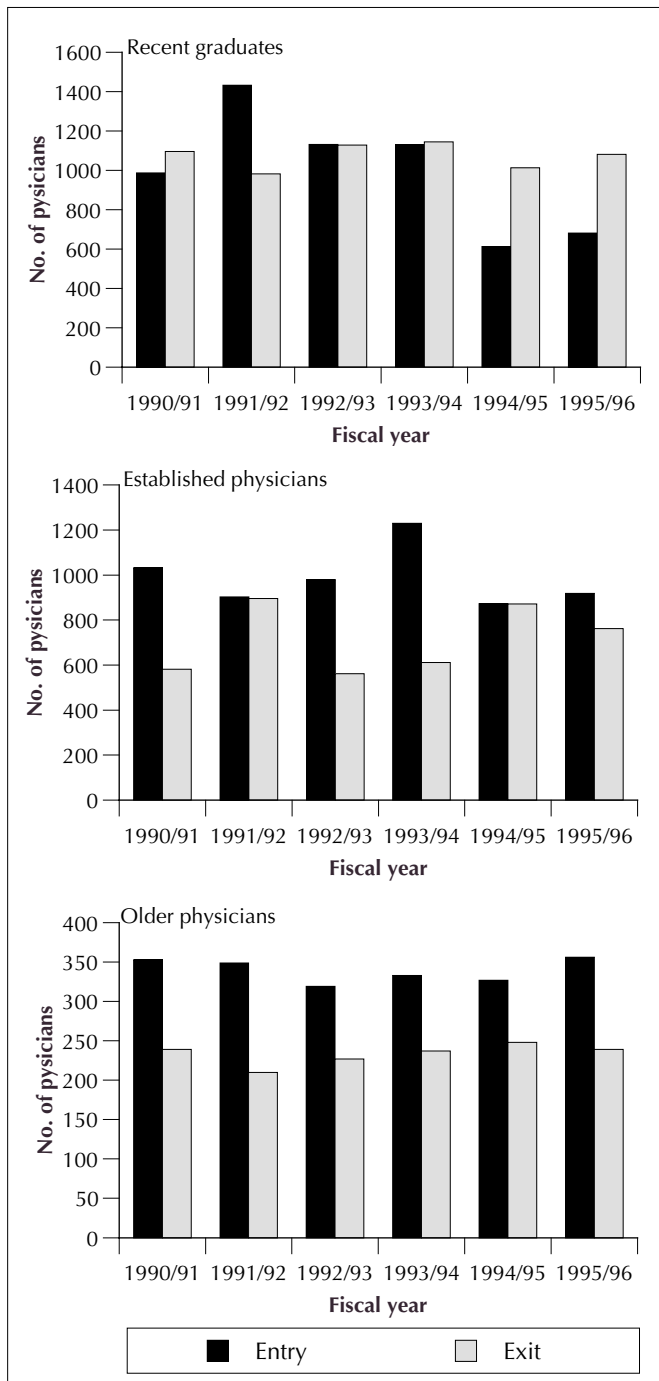


Fig. 2: Number of physicians entering and leaving the workforce in fiscal years 1990/91 to 1995/96 for recent graduates (in practice for 5 years or less), established physicians (under age 65 and not recent graduates) and older physicians (aged 65 or more).

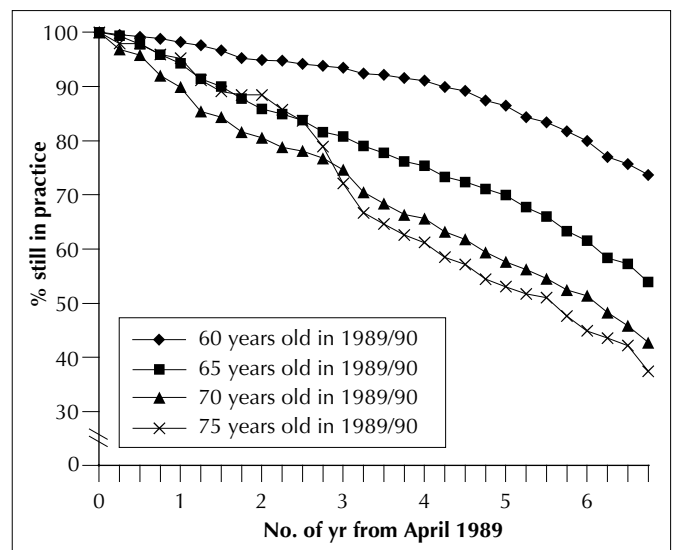


Fig. 3: Attrition curves indicating the number of physicians still in practice over time for physicians of various ages in 1989/90.

physicians are also much less likely to practise obstetrics, perform minor procedures or provide emergency department services.

On the other hand, older physicians treat older patients. If policy-makers were to enact policies encouraging early retirement, they would have to consider the effect of such policies on access to physician services for older patients. New physicians would have to be willing to assume the care of a higher proportion of older patients, whose conditions may be complex and difficult to treat. Furthermore, patients may be unsettled by the loss of a familiar caregiver.

A particular concern is the effect of future retirement on specialist care in rural areas. In rural communities served predominantly by GP/FPs with support from a small number of specialists, the specialists are more likely to be age 65 or over. This may be due to several factors. These specialists in rural areas may have difficulty attracting recent graduates to work in relative isolation. In addition, the increasing trend toward subspecialization may lead to recent graduates' being inadequately trained to deal with the broad range of general internal medicine or general surgery that these physicians must master.

Our study has several limitations. First, although Health Canada's definition of FTE¹¹ has been used by other researchers,^{23,24} it is ultimately an arbitrary judgement with which readers may or may not agree. Second, the patterns of practice of older physicians that we observed are based on behaviour during the early 1990s, a particularly turbulent period in physician remuneration policy. These observed patterns may not be generalizable to future periods. A third limitation is that there may be some error in measurement of some variables, particularly the urban/rural definition. Physicians report a postal code to the Ontario Health Insurance Plan, but some physicians work at more than one site. Finally, we chose a restrictive definition of rural status: regions that, because of their dependence on a small number of specialists, would be affected most severely should a specialist leave. Hence, our results should be interpreted with caution when they are compared with those of studies using less restrictive definitions of rural status.

In conclusion, the aging of Ontario's physician pool has important implications for clinical practice. Young physicians may have to face an increasing share of responsibility for obstetrics and emergency department coverage. Encouraging retirement and creating more openings for recent graduates, a higher proportion of whom are women, may enhance patient access to female physicians and per-

mit better sharing of obstetric and emergency coverage workloads. If early retirement policies are enacted, however, special attention should be paid to ensure that rural communities and older patients continue to be served.

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