Original Research

Correlates of certification in family medicine in the billing patterns of Ontario general practitioners

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There is conflicting evidence as to whether physicians who are certified in family medicine practise differently from their noncertified colleagues and what those differences are. We examined the extent to which certification in family medicine is associated with differences in the practice patterns of primary care physicians as reflected in their billing patterns. Billing data for 1986 were obtained from the Ontario Health Insurance Plan for 269 certified physicians and 375 noncertified physicians who had graduated from Ontario medical schools between 1972 and 1983 and who practised as general practitioners or family physicians in Ontario. As a group, certificants provided fewer services per patient and billed less per patient seen per month. They were more likely than noncertificants to include counselling, psychotherapy, prenatal and obstetric care, nonemergency hospital visits, surgical services and visits to chronic care facilities in their service mix and to bill in more service categories. Certificants billed more for prenatal and obstetric care, intermediate assessments, chronic care and nonemergency hospital visits and less for psychotherapy and after-hours services than noncertificants. Many of the differences detected suggest a practice style consistent with the objectives for training and certification in family medicine. However, whether the differences observed in our study and in previous studies are related more to self-selection of physicians for certification or to the types of educational experiences cannot be directly assessed.

On dispose de données contradictoires quant à savoir si le médecin exerce différemment selon qu'il détient ou non un certificat de formation en médecine familiale. Nous examinons la facturation au régime d'assurance-santé de l'Ontario de 1986 par 269 médecins qui ont le certificat et 375 qui ne l'ont pas, tous diplômés dans la province de 1972 à 1983 et exerçant la médecine générale ou familiale. En moyenne, par rapport aux non-détenteurs, les détenteurs du certificat font moins d'actes par client et demandent moins d'honoraires mensuels par client. Ils sont plus nombreux à pratiquer les conseils, la psychothérapie, les soins prénatals et obstétricaux, les visites non urgentes à l'hôpital et à l'hospice, et la chirurgie; en somme, les actes pour lesquels ils demandent des honoraires sont plus diversifiés. Ils demandent plus d'honoraires par client pour les soins prénatals et obstétricaux, les examens de portée moyenne, le soin des malades chroniques et les visites non urgentes à l'hôpital; ils en demandent moins pour la psychothérapie et les actes après les heures normales de travail. Si plusieurs de ces différences font croire à un genre d'exercice en harmonie avec les buts de la formation conduisant au certificat en médecine familiale, on ne peut déterminer, non plus que pour les différences observées par d'autres auteurs, si elles résultent de cette formation ou si elles reflètent plutôt les inclinations du médecin qui est porté à rechercher le certificat.

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Training and certification in family medicine emphasize the role of the family physician in providing comprehensive, holistic, continuing care throughout the life cycle to families and individuals. This role incorporates prevention, health maintenance, treatment of acute and chronic illness, rehabilitation and palliative care. Certification confirms that the physician is expected to be competent in delivering this kind of health care.[1]

Despite differences in qualifications, it has been difficult to demonstrate differences in the practice patterns of physicians certified in family medicine and their noncertified colleagues. In Canada four studies have used provincial health insurance billing data to investigate such differences. Brennan and Stewart[2] studied University of Western Ontario graduates who had or had not completed a family medicine residency program at that university before entering primary care practice. They found substantial differences between the two groups in self-reported attitudes toward the practice of physicians who had taken different training routes. However, they also examined Ontario Health Insurance Plan (OHIP) billings for a 3-month period and found no significant differences in billing patterns. The lack of difference may have been a function of the small number of subjects studied (19 certified and 38 noncertified physicians). Furthermore, 42.1% of the family medicine graduates had been in practice only 3 months before their billing data were examined, compared with 15.7% of the physicians who had completed internships before entry into practice.

Curry[3] examined the billing patterns of 18 family-medicine-trained and 37 internship-trained Dalhousie University graduates who entered primary care practice. In this study both insensitive measures and a small sample may have contributed to the observed lack of difference between the two groups. Only the percentage of total billings of each group in various billing categories was examined, and within-group differences in billing patterns were not considered in the analysis.

Frenette[4] compared the billing patterns for 1979 of 42 family medicine graduates and 47 graduates of internships at Laval University who entered primary care practice in Quebec. He found that more of the family medicine graduates than of the graduates of internships submitted bills for work in emergency departments and chronic care facilities, other hospital-based services and house calls. Greater diversity in type of billings but greater homogeneity in practice patterns was observed for the family medicine graduates than for those who had completed internships. Frenette noted that he was unable to obtain reliable information for comparison of obstetric services or diagnostic and therapeutic procedures.

More recently a group from British Columbia studied 65 family-medicine-trained primary care physicians educated in Canada who were in practice in British Columbia.[5] The subjects had contributed 3 years of billings since 1983 to the British Columbia health insurance plan and maintained at least 0.75 of a full-time equivalent in dollars billed during each of those years. Each was matched with two internship-trained primary care physicians for location, medical school, period of graduation and category of billing (group or solo practice). In an unpaired analysis no differences were observed in practice variables (e.g., number of patients seen, total billings and number of services), and only one significant difference (increased maternity care services among certified physicians) was seen across the six types of services examined for a training effect. Diversity of practice (i.e., number of physicians in each group who billed in a given service category) was not examined.

These studies raise questions about the sensitivity of billing patterns to the effects of training and certification in family medicine and the relation between the primary determinants of physicians' practice patterns and their postgraduate qualifications. However, each study had methodologic limitations that may have contributed to the inability to detect possible differences. In two studies the sample was small and the analysis was flawed. Overmatching may have occurred in the British Columbia study.

We used physicians' billings to OHIP[6] to examine the practice patterns of graduates of Ontario medical schools. Data gathered by OHIP give detailed records of numbers and types of services provided, including place and time of delivery. Laboratory services ordered (outside of hospital) and consultations requested by each physician are also included. We used this information to determine the extent to which certification in family medicine, irrespective of route of certification, is associated with a distinctive billing profile.

Methods

The OHIP billing data for 1986 for 644 Ontario family physicians and general practitioners were obtained from the Ontario Ministry of Health. This group of physicians included all McMaster University medical school graduates (1972–83) who billed OHIP for $5000 or more during the 1986 calendar year as fee-for-service general or family practitioners and comparison practitioners who graduated from one of the four other medical schools in the province (University of Ottawa, Queen's University, University of Toronto or University of Western Ontario) during the same period. Comparison physicians were matched pairwise to the McMaster physicians for sex, period of graduation, practice location (urban or rural [less than 10 000 population]) and residence in one of the nine billing districts of the province. This process resulted in selection of 1 in 3.5 women and 1 in 8 men who graduated from one of the four other medical schools. A more detailed description of the sample selection process is found elsewhere.[7] Sample selection was designed to allow the best assessment

of differences in practice patterns related to undergraduate medical education. Secondary analyses of the extent to which differences in practice patterns related to certification status and sex were also planned.

Information on the physicians' family medicine certification status, which is not available in the OHIP files, was obtained from the College of Family Physicians of Canada after sample selection and was merged with the OHIP data. Most physicians who were certified had obtained certification through the residency training route (84%) rather than the practice-eligible route (16%). Confidentiality was ensured by removing unique identifiers after these files were merged and before they were provided to us.

The available OHIP data do not allow identification of physicians who work part-time. Thus, a work status variable was developed that assigned part-time status to physicians who billed less than $5201 per month, one-half the median monthly income of the total group.

Characteristics of practice included number of months per year during which billings were submitted, mean number of patients seen per active billing month, numbers of services performed, dollar value of billings, cost per service and per patient, and number of encounters per patient. The OHIP files contain the number of initial patient encounters per month (patients per month) but do not allow calculation of the number of individual patients seen per year. The number of times (up to five) a patient is seen in a month is also noted. Because some patients may be seen more than five times per month, the number of encounters per month is a slight underestimate.

We further examined practice patterns by looking at the proportion of certified and noncertified physicians who included specific services in their practices (i.e., submitted at least one billing) and the mean number of such services provided per 100 patients per month. Within the OHIP data, although most services reflect a discrete service, some services are calculated as time units. Patient time units are used in calculating psychotherapy and counselling services, and surgical service billings consist of a combination of service plus time units. Time units were counted as discrete services in the analyses. The following 15 services, reflecting major OHIP fee schedule groupings, were explored: general, intermediate and minor assessments, psychotherapy, counselling, nonemergency hospital work, emergency department duty, house calls and after-hours services, consultations received, surgery directly provided, surgical or anesthetic assistance, prenatal and obstetric care (per 100 female patients aged 15 to 49 years) and chronic care (per 100 patients aged 65 years or more). The influence of certification in family medicine on the number and cost of services requested or provided on site on behalf of the patient (consultation requests, diagnostic and therapeutic procedures, and laboratory investigations) was also explored. Only laboratory work done in the physician's office or in a private laboratory is included in the OHIP file.

The initial paired study design by type of undergraduate education was taken into account in examining differences between certified and noncertified physicians. The original matching variables (sex, school of graduation, period of graduation and practice location) and work status were forced into the regression equation before the effect of certification was examined. We used both the simple *t*-test and regression techniques to examine potential differences in practice patterns and billing patterns per 100 patients by certification status. The chi-squared test was used when comparing the number of physicians who billed for a given service. All analyses were done with SPSS-X.[8] Given the number of tests to be done, before beginning the data analyses we decided that p values greater than 0.01 and less than 0.05 would be regarded as interesting, and those equal to or less than 0.01 would be regarded as statistically significant.

Results

Of the 644 subjects 269 were certified in family medicine and 375 were not (Table I). Significantly more of the McMaster University graduates (52%) than of the graduates of the other Ontario medical schools (32%) were certified, and significantly more of the women (54%) than of the

Table I — Characteristics of 644 Ontario primary care physicians certified or not certified in family medicine

Characteristic	No. (and %) of physicians	
	Certified (n = 269)	Not certified (n = 375)
Sex*		
Male (n = 432)	277 (64)	155 (36)
Female (n = 212)	98 (46)	114 (54)
Year of graduation†		
1972–79 (n = 305)	192 (63)	113 (37)
1980–83 (n = 339)	183 (54)	156 (46)
School‡		
McMaster University (n = 322)	155 (48)	167 (52)
Other Ontario university (n = 322)	220 (68)	102 (32)
Work status§		
Part-time (n = 115)	78 (68)	37 (32)
Full time (n = 529)	297 (56)	232 (44)
Practice location‖		
Urban (n = 568)	331 (58)	237 (42)
Rural (n = 76)	44 (58)	32 (42)
All	375 (58)	269 (42)

*$\chi^2_1 = 17.993$, $p < 0.0001$.
†$\chi^2_1 = 4.947$, $p = 0.0261$.
‡$\chi^2_1 = 26.149$, $p < 0.0001$.
§$\chi^2_1 = 4.831$, $p = 0.0280$.
‖$\chi^2_1 = 0.000$, $p = 1.0000$.

men (36%) were certified. Somewhat more of the physicians who graduated in 1980–83 (46%) than of the earlier graduates (37%) were certified, and somewhat more of the physicians who worked full time (44%) than of those who worked part-time (32%) were certified. There was no difference in certification status between physicians in urban and rural practice locations.

Tables II and III show the basic characteristics of certificants' and noncertificants' practices. An interesting difference was seen in the number of months for which physicians had any OHIP billings, certified physicians billing in 0.3 more months during 1986 than noncertified physicians. Although certificants and noncertificants did not differ in number of services provided, earnings from OHIP, number of patients seen per month or number of encounters per patient per month, an interesting difference was noted in cost per service per month, which was somewhat lower for certificants. Certified physicians provided significantly fewer services per patient and billed less per patient seen per month than noncertificants. These differences were seen with and without adjustment for differences between the groups in sex, school of graduation, period of graduation, practice location and work status (Table III).

Significantly more certificants' than noncertificants' practices included counselling, psychotherapy, prenatal care and intrapartum obstetric care, nonemergency hospital work, direct surgical services and visits to chronic care facilities (Table IV). Somewhat more certified physicians than noncertified physicians included house calls and general assessments in their service mix. No difference was seen between the two groups in the likelihood of ever billing in 1986 for minor and intermediate assessments, emergency room duty, after-hours work, surgical or anesthetic assistance and consultations received.

We also determined whether the certified and noncertified physicians differed in the mean number of service categories provided. Certified physicians billed in 11.68 (standard deviation [SD] 2.62) of the 15 service categories, noncertified physicians

Table III — Association of certification with characteristics of practice, as determined with the *t*-test and regression analysis*

Characteristic	t	p	Mean difference between groups (certified minus noncertified)†
No. of active months			
t-test	2.53	0.012	0.3
Regression analysis	2.40	0.017	0.3
Practice variables per active month			
No. of services			
t-test	−1.47	0.143	−51.8
Regression analysis	−0.90	0.370	NA
Earnings from OHIP, $			
t-test	−1.02	0.309	−494.12
Regression analysis	−0.75	0.454	NA
No. of patients seen			
t-test	−0.82	0.414	−13.0
Regression analysis	−0.18	0.858	NA
Cost per service, $			
t-test	−2.02	0.044	−0.78
Regression analysis	−2.56	0.011	−1.04
Cost per patient, $			
t-test	−3.06	0.002	−8.75
Regression analysis	−3.24	0.001	−10.44
No. of services per patient			
t-test	−3.28	0.001	−0.4
Regression analysis	−3.25	0.001	−0.4
No. of encounters per patient			
t-test	−1.31	0.189	−0.03
Regression analysis	−1.69	0.092	NA

*After controlling for the effects of sex, school of graduation, period of graduation, practice location and work status.
†NA = not applicable, because certification status did not enter the equation.

Table II — Characteristics of practice in 1986 of the two groups

Characteristic	Mean (and standard deviation [SD]); group			
	Certified		Noncertified	
No. of active months	11.56	(1.46)*	11.22	(1.97)
Practice variables per active month				
No. of services	638.72	(362.16)	690.52	(534.34)
Earnings from Ontario Health Insurance Plan (OHIP), $	10 742.43	(5489.27)	11 236.54	(6812.86)
No. of patients seen	335.98	(176.45)	348.94	(225.52)
Cost per service, $	17.81	(3.82)	18.59	(5.92)*
Cost per patient, $	34.86	(22.21)	43.60	(48.71)†
No. of services per patient	1.96	(0.82)	2.33	(1.97)‡
No. of encounters per patient	1.27	(0.22)	1.30	(0.35)

*$p \leq 0.05$.
†$p \leq 0.01$.
‡$p \leq 0.001$.

in 10.51 (SD 3.42) ($t = 4.93$, $p < 0.001$). The mean difference increased slightly (by 1.19 services) and remained highly significant ($p < 0.001$) after adjustment for confounding variables by means of regression analysis.

Interesting or significant differences in mean number of services provided per 100 patients were seen between the two groups for 7 of the 15 service categories examined (Table V). Certificants billed for significantly more prenatal care, intermediate assessment and obstetric care services than did noncertificants. Billings for nonemergency hospital visits did not appear to be significantly different in our unadjusted analysis, but certificants billed for somewhat more such services than noncertificants in the adjusted analysis. There was also an interesting difference in the mean number of chronic care services provided, certificants billing for more services. Certification was associated with fewer billings for psychotherapy services and for after-hours services.

The significant difference in mean number of house calls seen in the unadjusted comparison became unimportant when we accounted for the effect of the confounding variables.

We examined the association of certification with mean number of services ordered per 100 patients to assist in diagnosis and management decisions and with the cost of these services. No significant or interesting differences between the two groups were seen for consultations requested, diagnostic and therapeutic procedures performed or laboratory tests ordered. Similarly, no difference was observed in cost of these services per 100 patients.

Although the number of physicians certified in family medicine through the practice-eligible route was small (43), simple one-way analysis of variance suggested that these physicians resembled their colleagues who had achieved eligibility for certification through the residency training route more than they resembled the noncertified group

Table IV — Proportion of physicians who billed in various service categories

Service	% of physicians: Certified	% of physicians: Not certified	χ_1^2	p
Counselling	95	81	23.86	< 0.001
Prenatal care	88	74	18.83	< 0.001
Chronic care	64	47	17.33	< 0.001
Nonemergency hospital work	94	83	16.12	< 0.001
Direct surgical services	98	91	12.37	< 0.001
Psychotherapy	98	91	12.09	< 0.001
Obstetric care	62	50	7.65	0.006
House calls	89	81	6.18	0.013
Assessments, general	96	91	5.73	0.017
After-hours services	93	89	2.55	0.110
Assessments, intermediate	96	93	2.11	0.147
Surgical or anesthestic assistance	66	61	1.98	0.159
Assessments, minor	96	94	1.42	0.234
Emergency department duty	35	39	0.62	0.433
Consultations received	34	30	0.54	0.461

Table V — Service categories in which an interesting or a significant difference was observed between the two groups in number of services per 100 patients

Service	Mean no. of services provided (and SD); group: Certified	Mean no. of services provided (and SD); group: Noncertified	Mean difference between groups*	t: *t*-test	t: Regression analysis	p: *t*-test	p: Regression analysis
Prenatal care†	10.31 (8.87)	6.44 (8.67)	3.88 (3.35)	5.52	4.68	< 0.001	< 0.001
Assessments, intermediate	55.13 (21.74)	48.84 (27.24)	6.29 (5.76)	3.25	2.78	0.001	0.006
Obstetric care†	2.46 (3.92)	1.74 (2.76)	0.72 (0.73)	2.59	2.68	0.010	0.008
Psychotherapy	12.51 (61.77)	32.02 (138.29)	−19.51 (−24.37)	−2.42	−2.65	0.016	0.008
Nonemergency hospital work	10.81 (10.30)	9.33 (11.59)	1.47 (2.22)	1.70	2.43	0.090	0.015
Chronic care‡	19.38 (55.25)	10.60 (37.94)	8.78 (9.06)	2.25	2.34	0.025	0.020
After-hours services	6.26 (11.93)	10.50 (24.49)	−4.24 (−3.84)	−2.90	−2.31	0.004	0.021

*Certified minus noncertified; mean difference after controlling for confounding variables (sex, school of graduation, period of graduation, practice location and work status) in parenthesis.
†Per 100 female patients aged 15 to 49 years.
‡Per 100 patients aged 65 years or more.

(see examples in Table VI). Observed differences among the three groups were significant only between the residency training group and the noncertified group; this is likely due to the small number in the practice-eligible group.

Discussion

We found some differences in style of practice between primary care physicians with and without certification in family medicine. Certificants billed OHIP during more months of the year and worked 0.3 more months per year. This finding may have staffing implications, as 1000 certificants would contribute 300 more months of work per year than 1000 noncertificants. Certified physicians submitted billings in more categories than noncertified physicians, which suggests a more comprehensive style of practice. This finding is similar to that reported by Frenette[4] and may reflect the objectives of certification,[1] which emphasize comprehensive continuing care, including delivery of services in a variety of settings.

Physicians certified in family medicine provided a greater number of prenatal and obstetric services, a difference also reported by Sheps and colleagues.[5] Although certified physicians were significantly more likely to include psychotherapy in their practices, they billed for fewer of these services per 100 patients than noncertified physicians. The large standard deviation for psychotherapy services billed by noncertificants suggests that this difference may be the result of the high proportion of psychotherapy services performed by a small number of noncertified physicians.

Across the practice variables and service categories examined we often observed greater variability (higher standard deviations) for the noncertified physicians than for their certified colleagues. This suggests that, as a group, noncertified physicians are more heterogeneous in their practice behaviour than certified physicians, yet their billings reflect a narrower range of services provided for individuals within the group. This observation may help explain why it has been difficult to detect effects of certification on practice behaviours when small groups of physicians are studied.

Studies from the United States have suggested that physicians trained in family medicine use more auxiliary services (laboratory tests, diagnostic and therapeutic procedures, and consultations) than general practitioners.[9,10] Our results and those of other Canadian studies[5,11] do not support this observation, which probably reflects the use of noncontemporaneous controls (older physicians) in the US comparison group.

The differences seen between certificants and noncertificants in our study may reflect differences in the health status or age and sex structure of the patient populations served by the physicians. However, certification was not significantly related to the age and sex structure of the physicians' practices within this group.[7] Sex of the physician was, however, related to the age and sex structure of the practice: female patients, particularly those of childbearing age, were overrepresented in the practices of women as compared with those of men.[12] We could not assess whether there were differences in the health status of patients between the practices of certified and noncertified physicians, but there is no reason to expect that the patient groups were dissimilar. In another study of certified and noncertified Ontario physicians in which medical records were examined no difference in case mix was found.[11]

As we were completing our study we became aware of the recent paper by Sheps and colleagues,[5] which reported little difference in practice behaviour between certified and noncertified general practitioners and family physicians (1975–83 graduates) in British Columbia. The authors speculated that overmatching for year of graduation and

Table VI — Number of services per 100 patients provided by physicians by type of qualification: examples of one-way analyses of variance

Service; group	Mean no. of services provided (and SD)	F	p
After-hours services			
Certified			
Practice-eligible (n = 43)	6.2 (8.6)		
Residency training (n = 226)	6.3 (12.5)		
		3.43	0.03
Noncertified (n = 375)	10.5 (24.5)*		
Obstetric care			
Certified			
Practice-eligible	2.2 (3.0)		
Residency training	2.5 (4.1)		
		3.93	0.02
Noncertified	1.7 (2.8)*		
Prenatal care			
Certified			
Practice-eligible	9.9 (8.1)		
Residency training	10.4 (9.0)		
		15.38	0.000
Noncertified	6.5 (8.7)*		
Assessments, intermediate			
Certified			
Practice-eligible	55.5 (25.4)		
Residency training	55.0 (21.0)		
		4.92	0.008
Noncertified	48.8 (27.2)*		
Nonemergency hospital work			
Certified			
Practice-eligible	11.0 (10.9)		
Residency training	10.8 (10.2)		
		1.395	0.25
Noncertified	9.3 (11.6)		

*Sheffé's test showed a significant difference between the noncertified group and the group with residency training.

type and location of practice might have artificially created groups similar with regard to practice pattern. Since we had matched for sex, year of graduation and practice location we thought that their monetary criterion used for study entry (billing at least 0.75 of a full-time equivalent for 1984–87 inclusive) might have restricted their sample to physicians whose practice patterns were highly similar. Furthermore, the criterion had reduced their available sample by nearly 50%. We applied a similar criterion (i.e., billing at least 0.75 of the mean group billings during 1986) to our sample after deleting the data for the 43 physicians who had become certified through the practice-eligible route. Only 65% (146) of the certified and 64% (241) of the noncertified physicians in our sample met the criterion during one year. Of these, 44% (172) were McMaster graduates and 56% (215) were graduates of the other Ontario medical schools. Attrition was greater for women (42% retained) than for men (76% retained).

We reran our analyses, including the data for only these 387 physicians. Most of the differences observed previously between the certified and noncertified physicians disappeared. Although some loss of power to detect differences occurred, the absolute differences between groups also decreased in most instances. No differences in basic practice characteristics were observed, and only two differences in number of services per 100 patients remained: certified physicians continued to provide more prenatal care (adjusted $t = 3.30$, 4 and 382 degrees of freedom [df], $p = 0.001$) and more obstetric care (adjusted $t = 2.10$, 4 and 382 df, $p = 0.036$) than noncertified physicians. These differences mirror the difference observed by Sheps and colleagues, who reported that certified physicians provided significantly more maternity care services than physicians not certified in family medicine.

The British Columbia group did not analyse the proportion of certified and noncertified physicians who submitted bills in various categories. We continued to see differences here, despite the restricted sample, although statistical significance was reduced, and for three of the seven services (prenatal care, direct surgical services and house calls) that previously differentiated the two groups the results were no longer even in the interesting range. Both loss of power due to smaller samples and a decrease in the absolute differences between the two groups were observed.

Our study has methodologic limitations. The study group was not selected to examine certification effects specifically. Rather, the primary analysis examined differences in practice patterns between McMaster graduates and graduates of the other Ontario medical schools. Thus, McMaster graduates are overrepresented among the physicians studied in this secondary data analysis. However, regression analysis was used to adjust for potential differences between certified and noncertified physicians in sex, school of graduation, year of graduation, practice location and work status. With and without such adjustment, certification effects were seen in style of practice, mix of services provided and extent of billing in various service categories.

In summary, the billing patterns of physicians certified or not certified in family medicine suggest a number of interesting and potentially important differences in their practice behaviours. Certification was found to be associated with more differences in billings in our study than in previous Canadian studies.[2-5] However, our study replicated the differences observed in the two Canadian studies that showed some differences.[4,5]

Differences in quality of care cannot be assessed from billing patterns. The best available evidence that certificants also deliver care of higher quality in their practices comes from the study by Borgiel and associates.[11] Using preset criteria applied to 182 conditions commonly seen in general practice, they judged the quality of care provided by certificants to be significantly higher than that provided by noncertificants among 120 general practitioners and family physicians in Ontario.

Although our findings suggest some differences in the practice behaviour of certified and noncertified physicians, the reasons for these differences are not clear. It is possible that self-selection has occurred, as the family medicine certification examination is not obligatory. Physicians who choose to become certified may hold attitudes that relate to both their decision to seek certification and their practice decisions. This hypothesis cannot be formally tested. It could be claimed that our findings, which indicate similarity between certified physicians regardless of route to certification (although the practice-eligible group was small), support such a speculation. However, it is equally plausible that continuing education experiences sought by practice-eligible certificants in preparation for the certification examination substitute well for family medicine residency training, which addresses the learning objectives measured by the examination. Thus, an effect of education cannot be ruled out.

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References

1. Committee on Educational Objectives: *Canadian Family Medicine: Educational Objectives for Certification in Family Medicine*, 2nd ed, College of Family Physicians of Canada, Toronto, 1981
2. Brennan M, Stewart M: Attitudes and patterns of practice: a comparison of graduates of a residency program in family medicine and controls. *J Fam Pract* 1978; 7: 741–748
3. Curry L: Postgraduate training route and content of subsequent practice. *Can Fam Physician* 1985; 31: 1417–1420
4. Frenette J: What do family practice graduates do? A comparative study. *Can Fam Physician* 1984; 30: 2281–2288

5. Sheps SB, Schechter MT, Grantham P et al: Practice patterns of family physicians with 2-year residency v. 1-year internship training: Do both roads lead to Rome? *Can Med Assoc J* 1989; 140: 913–918
6. *OHIP Schedule of Benefits — Physician Services*, Ont Ministry of Health, Toronto, 1986
7. Woodward CA, Ferrier BM, Goldsmith CH et al: Billing patterns of general and family physicians in Ontario: comparison of graduates of McMaster medical school with graduates of other Ontario medical schools. In *Research in Medical Education: Proceedings of the 27th Annual Conference, Association of American Medical Colleges, Washington, DC*, 1988: 267–281
8. *SPSS-X Users' Guide*, 3rd ed, SPSS Inc, Chicago, 1988
9. Eisenberg JM, Nicklin D: Use of diagnostic services by physicians in community practice. *Med Care* 1981; 19: 297–309
10. Rosenblatt RA, Cherkin DC, Schneeweiss R et al: The structure and content of family practice: current status and future trends. *J Fam Pract* 1982; 15: 681–722
11. Borgiel AEM, Williams JI, Bass MJ et al: Quality of care in family practice: Does residency training make a difference? *Can Med Assoc J* 1989; 140: 1035–1043
12. Cohen M, Woodward CA, Ferrier BM et al: Gender differences in practice patterns of Ontario family physicians (McMaster graduates). *J Am Med Wom Assoc* (in press)

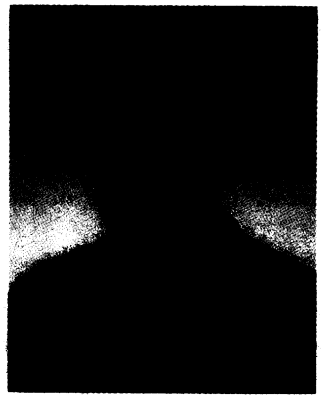
My terms

My terms for a lecture where I stay over night are these: Fifteen dollars and my expenses; a room with a fire in it in a public house, and a mattress to sleep on, not a feather bed. As you write in your individual capacity I tell you at once all my habitual exigencies. I am afraid to sleep in a cold room, I can't sleep on a feather bed, I will not go to private houses, and I have figured on the sum mentioned as what it is worth to me *to go away for the night to places that can not pay more.*

— Oliver Wendell Holmes (1809–1894)

This Kid's 60

No Kidding. Rick Flaxman doesn't know the meaning of age. In fact he doesn't feel much different now than he did thirty years ago.



Major new scientific breakthrough? Not really. Just some simple, healthy habits that make Rick Flaxman forget his age.

He calls it "pleasure-cise". Keeping fit by doing things he likes to do. A fitness philosophy that never gets boring. Because Rick Flaxman doesn't believe exercise should be anything but a pleasure.

A bike-ride in the park or a game of hockey with guys young enough to be... well, you know. It's kept Rick Flaxman fit for a lifetime of living.

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