

# High-billing general practitioners and family physicians in Ontario: How do they do it?

## An analysis of practice patterns of GP/FPs with annual billings over \$400 000

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### Abstract

**Background:** To better understand the reasons why some fee-for-service physicians have high billing levels, the authors compared the practice and demographic characteristics of general practitioners and family physicians (GP/FPs) who submitted over \$400 000 in annual Ontario Health Insurance Plan (OHIP) fee-for-service claims in 1994–95 with those of GP/FPs who billed between \$35 000 and \$400 000.

**Methods:** The authors describe the OHIP billing and physician characteristic data for fiscal year 1994–95. They used multivariate logistic regression to determine factors independently associated with high billing status.

**Results:** A total of 219 GP/FPs (2.5% of the GP/FPs in Ontario) billed over \$400 000 in 1994–95. Of these, 14 had billing patterns similar to those of specialists, and 27 billed predominantly for diagnostic and therapeutic procedures (particularly physiotherapy). The remaining 178 (81.3%) billed for a mix of services similar to that of other GP/FPs but on average had 2.6 times the volume of patient assessments and a greater share of their total billings derived from diagnostic and therapeutic procedures (9.1% v. 5.6%). Multivariate analysis indicated that these high-volume GP/FPs were less likely than GP/FPs who billed between \$35 000 and \$400 000 to be 60 years of age or older (odds ratio [OR] 0.09,  $p < 0.05$ ) and female (OR 0.21) and were more likely to be foreign graduates (OR 1.85) and practising in a region with low physician supply (OR 0.45 for each increase of 1 physician per 1000 population). Metropolitan Toronto was an outlier to the latter relation and was more likely to have high-volume GP/FPs (OR 16.89).

**Interpretation:** High-billing GP/FPs attained their high billing levels by maintaining large numbers of patient visits and by performing procedures. Further research is needed to determine the time spent per patient and the quality of care delivered by these physicians as well as the appropriateness of the procedures that they perform.

### Résumé

**Contexte :** Afin de mieux comprendre pourquoi certains médecins rémunérés à l'acte ont des facturations élevées, les auteurs ont comparé la pratique et les caractéristiques démographiques des omnipraticiens et des médecins de famille (OP/MF) qui ont présenté au Régime d'assurance-maladie de l'Ontario (RAMO) des demandes de paiement à l'acte totalisant plus de 400 000 \$ en 1994–1995 à celles des OP/MF qui ont facturé entre 35 000 \$ et 400 000 \$.

**Méthodes :** Les auteurs décrivent la facturation au RAMO et les données caractéristiques des factures et des médecins pour l'exercice 1994–1995. Ils ont eu recours à une régression logistique à variables multiples pour déterminer les facteurs indépendants associés à une facturation élevée.

**Résultats :** Au total, 219 OP/MF (2,5 % des OP/MF de l'Ontario) ont facturé des actes pour plus de 400 000 \$ en 1994–1995. De ce nombre, 14 présentaient un



### Evidence

### Études

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régime de facturation semblable à celui des spécialistes et 27 ont surtout facturé des procédures diagnostiques et thérapeutiques (plus particulièrement en physiothérapie). Les 178 autres (81,3 %) ont facturé une composition de services semblable à celles des autres OP/MF, mais en moyenne, le volume de leurs évaluations de patients a été 2,6 fois plus élevé et les procédures diagnostiques et thérapeutiques ont figuré pour un pourcentage plus important de leurs factures totales (9,1 % c. 5,6 %). L'analyse à variables multiples a révélé que, par rapport aux OP/MF qui ont facturé des montants variant entre 35 000 \$ et 400 000 \$, ces OP/MF à volume élevé étaient moins susceptibles d'avoir 60 ans ou plus (risque relatif [RR] 0,09,  $p < 0,05$ ) et d'être des femmes (RR 0,21), mais plus susceptibles d'être des diplômés étrangers (RR 1,85) et de pratiquer dans une région moins bien pourvue en médecins (RR 0,45 pour chaque médecin de plus par tranche de 1 000 habitants). La région métropolitaine de Toronto a échappé (valeur aberrante) à cette dernière corrélation, car on tend à y trouver un plus grand nombre d'OP/MF à volume élevé (RR 16,89).

**Interprétation :** Les OP/MF qui facturent des montants élevés reçoivent de nombreux patients et exécutent diverses procédures. D'autres études s'imposent pour déterminer le temps que ces médecins consacrent à chaque patient, la qualité des soins qu'ils dispensent et le caractère approprié des procédures qu'ils exécutent.

Physician reimbursement is a key component of health care policy in Canada. Despite vigorous debate over the role of capitation and salary models, most physicians are still paid on a fee-for-service basis. Rather than adopting alternative payment plans, provinces have modified the rules governing fee-for-service practice to contain overall physician expenditures and to encourage a balanced geographic distribution of physicians. Some of these changes include global expenditure caps, restrictions on practice location and delisting of certain services.<sup>1</sup>

Although all physicians have been subject to expenditure control policies, high-billing physicians have attracted particular attention. Several provinces have introduced individual physician billing limitations. In Ontario in 1991, thresholds were introduced whereby physician billings exceeding \$400 000 were subject to a one-third reduction in fees and billings over \$450 000 a reduction of two-thirds. Exemptions were made for physicians in underserved areas, certain high-demand specialties and the technical component of diagnostic and therapeutic procedures. General practitioners and family physicians (GP/FPs) and specialists were subject to the same threshold levels.

One reason why high-billing physicians have attracted the interest of policy-makers may be because they account for a disproportionately large share of total billings. In a previous analysis<sup>2</sup> we found that in 1994-95, 2.5% of Ontario GP/FPs billed over \$400 000 to the Ontario Health Insurance Plan (OHIP) and that these physicians accounted for 6.4% of total GP/FP fee-for-service billings. The average GP/FP bills 30% less than the average specialist in Ontario. Furthermore, 88% of all specialists in the province bill \$400 000 or less.<sup>2</sup> These findings raise the question of why some primary care physicians bill more than the majority of specialists. One explanation

may be that these physicians work in areas of low physician supply and high demand for services. Another is that they are "quasi-specialists" who have a general licence and some specialty training but do not, for whatever reason, hold specialty certification from the Royal College of Physicians and Surgeons of Canada. A third hypothesis is that these physicians are "procedurists," devoting most of their practice to a highly specialized set of diagnostic and therapeutic procedures. Such physicians may, for example, operate facilities specializing in these procedures.

The purpose of this study was to describe the patterns of practice of high-billing GP/FPs in Ontario. How many of these physicians are quasi-specialists or procedure-oriented physicians? Of those who are not, how do their practice patterns compare with those of physicians billing \$400 000 or less in terms of numbers of patient visits and mix of services provided?

## Methods

We examined OHIP data for fiscal year 1994-95 from the National Physician Database, maintained by the Canadian Institute for Health Information. This 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, registered postal code, specialty and school of graduation. Because OHIP does not distinguish between family physicians and general practitioners, these physicians were grouped together.

The database includes only OHIP fee-for-service billings and excludes the activity of the 5% of physicians practising under alternative payment plans (Paul Brochu, Ontario Ministry of Health, Toronto: personal communication, 1995). Physicians who billed less than \$35 000 were



also excluded from the study because they distort the number of physicians in practice; although they represent 15% of physicians, they account for only 1% of total billings.<sup>2</sup> Other services excluded from this analysis were certain inpatient diagnostic procedures remunerated through hospital budgets, out-of-province services, commercial laboratory services and services for other payers, such as private insurers and the Workers' Compensation Board. The data reflect price decreases, or "claw-backs," implemented during 1994–95 to help contain expenditures within the negotiated billing cap for the year, but they exclude an end-of-year adjustment of \$178 million recovered from physicians for billings exceeding the cap. Most important for this analysis, data in the National Physician Database represent billings before application of threshold reductions.

GP/FPs were classified as "high billers" if they billed more than \$400 000 in 1994–95. We calculated, for each high-billing GP/FP, the amount billed in each of 6 service categories: assessments and consultations, hospital visits, psychotherapy and counselling, diagnostic and therapeutic procedures, surgical procedures and special visit premiums. The reader is referred elsewhere for a description of this classification scheme.<sup>3</sup> Physicians were identified as quasi-specialists or procedurists if over half of their billings were for psychotherapy and counselling or for diagnostic, therapeutic or surgical procedures. For the remaining physicians we then examined whether, of the billings for assessments and consultations and special visit premiums, more than half were for emergency services, oculo-visual assessments or related consultations, or house-call visits. These physicians were also identified as quasi-specialists or procedurists. The fee codes for physicians meeting any of these criteria were then inspected manually to further classify them as a particular type of quasi-specialist or procedurist. High-billing GP/FPs not meeting these criteria were classified as "high-volume primary care GP/FPs."

Physicians were assigned to a district health council (DHC) according to their postal code. We also classified GP/FPs by the amount of specialty backup available. Both specialists and GP/FPs were assigned to the nearest hospital; if after these assignments a hospital had only GP/FPs, those GP/FPs were designated as having no immediate specialty backup. The number of GP/FPs per capita in the DHC was also used to assign to each physician a variable representing local physician supply. Physicians were classified as to the stage of their practice: recent graduates, who had completed medical school within the preceding 7 years, physicians 60 years of age or older, and "established" physicians (less than 60 years of age and not recent graduates).

We tested the association of high billing status with demographic characteristics using logistic regression. The dependent variable was high billing status (yes or no), and the independent variables were age, sex, foreign graduate status,

specialty backup, local physician supply (as defined by the number of GP/FPs per capita in the DHC) and whether the physician's practice was based in Metropolitan Toronto.

We examined differences in the likelihood of performing certain types of procedures between high-volume primary care GP/FPs and those who billed \$35 000 to \$400 000. For this analysis a physician had to perform a minimum number of services per year to qualify for the status of "providing the service." Minimums used in this study were as follows: emergency department coverage, 100 visits; electrocardiography, spirometry, audiology, physiotherapy and hospital inpatient care, 36 visits; sigmoidoscopy (performed less often), 12 visits; and deliveries, 1 visit. These threshold minimums were varied in a sensitivity analysis.

## Results

### *Characteristics of high-billing physicians*

The majority (178 [81.3%]) of the 219 high-billing GP/FPs were high-volume primary care GP/FPs. Of the remaining high-billing GP/FPs, 14 were quasi-specialists and 27 were procedurists. Specialties represented among the quasi-specialists were radiology (6 physicians), psychiatry (3), obstetrics and gynecology (2), emergency medicine (2) and general surgery (1). Procedures performed by the procedurists included physiotherapy (14 physicians), therapeutic abortions (3), physiotherapy and nerve blocks (2), sleep studies (2), audiometry (2) and, for 1 physician each, house calls, oculo-visual assessment, electromyography and cryotherapy/intralesional injections.

Fig. 1 shows the correlation between the proportion of GP/FPs in each DHC who were high billers and physician supply. High billing status tended to vary inversely with the number of GP/FPs per capita. There was only 1 high-billing physician in the Ottawa region and none in Kingston, 2 regions with high physician supply. Metropolitan Toronto was an important exception: it had the highest physician supply in the province and a large proportion of high billers.

The characteristics of the high- and lower-billing GP/FPs are shown in Table 1. High-billing physicians tended to be male, established physicians and foreign graduates ( $p < 0.01$ , Fisher's exact test). There were some differences between the 3 types of high-billing GP/FP, but most were not statistically significant, in part because of the small number of observations. Quasi-specialists tended to be foreign graduates, none were recent graduates, and relatively few were practising in Metropolitan Toronto.

Multivariate analysis was used for a more detailed comparison of the characteristics of GP/FPs whose billings exceeded \$400 000 and of those who billed \$35 000 to

\$400 000 (Table 1). Consistent with the bivariate analysis, high billers tended to be male, established physicians and foreign graduates, residing either in areas of low physician supply or in Metropolitan Toronto. Immediate specialty backup was not a significant factor, nor was medical school within Canada for domestic graduates (data not shown). A sensitivity analysis was performed in which high-billing quasi-specialists and procedurists were excluded. In these regressions, status as recent graduate became insignificant ( $p = 0.05$ ).

### Service profile of high-volume primary care GP/FPs

High-volume primary care GP/FPs derived 9.1% of their billings from diagnostic and therapeutic procedures, compared with 5.6% for GP/FPs who billed \$35 000 to \$400 000. High-volume primary care GP/FPs were more likely than lower-billing GP/FPs to perform many diagnostic and therapeutic procedures, including spirometry (29.2% v. 8.3%), electrocardiography (55.6% v. 20.7%), physiotherapy (27.5% v. 7.9%), sigmoidoscopy (10.1% v. 2.1%) and audiometry (10.7% v. 1.6%) ( $p < 0.001$  for all differences). There was no significant difference between the 2 groups in the likelihood of performing at least some hospital visits, emergency coverage or deliveries.

The average physician in the high-volume primary care group billed for 16 046 patient encounters in 1994–95 (Table 2). This corresponds to approximately 67 patient encounters per day, assuming approximately 240 working

days per year (2 weeks of vacation, 10 statutory holidays and no weekends worked). These volumes were 2.6 times higher than average volumes for other active physicians.

### Interpretation

In 1994–95 physicians who billed over \$400 000 constituted only 2.5% of all active GP/FPs in Ontario but accounted for 6.4% of total billings by GP/FPs.<sup>2</sup> Most of these physicians were not quasi-specialists or single-service providers but, instead, provided a high volume of primary care services. High-volume primary care GP/FPs performed on average 2.6 times the number of patient assessments that were performed by the average active GP/FP who billed \$35 000 to \$400 000 in 1994–95.

The finding that most high-billing physicians are men is not surprising. Female GP/FPs tend to provide fewer services than their male counterparts<sup>4</sup> and have lower average billings.<sup>2,4</sup> One-third of female physicians practise part-time,<sup>5</sup> and female physicians tend to interrupt their careers more frequently, particularly for childbearing and child rearing.<sup>6,7</sup> Finally, because female physicians tend to spend more time with their patients,<sup>8–10</sup> they may be less likely to maintain a high-volume practice.

Little is known about the case-mix of the patient population and the quality of the physician–patient interaction in high-volume practices other than the findings of a study in New Brunswick, which indicated that GP/FPs with very high numbers of office visits wrote more pre-

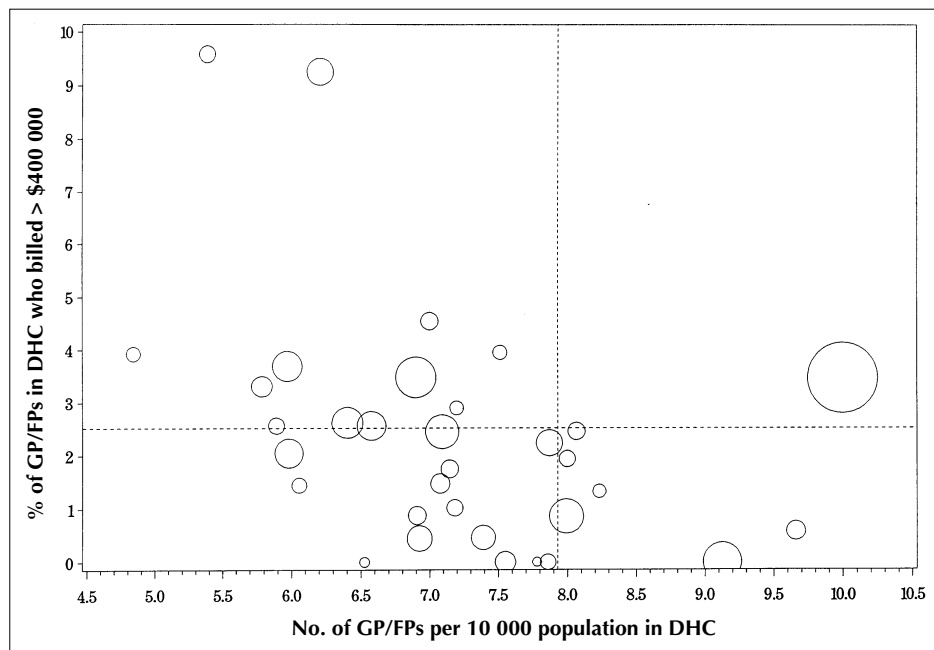


Fig. 1: Correlation between proportion of general and family practitioners (GP/FPs) in Ontario district health councils (DHCs) who billed over \$400 000 in 1994–95 and physician supply. Each circle represents one DHC, the size of the circle being proportional to population. Dashed lines represent the provincial mean.



scriptions per patient than those with low-volume practices.<sup>11</sup> The high volumes observed in our study raise the question of how much time these physicians were spending with their patients. Further research is needed to determine the appropriateness of visits among high-volume GP/FPs compared with lower-volume physicians. Other hypotheses that warrant further research are that high-billing GP/FPs maintain high volumes by providing more efficient service, by serving a particular niche or by being more popular than other physicians in the community.

In our study high-volume physicians were more likely to perform diagnostic and therapeutic procedures and derived a higher proportion of their billings from them. Many of these procedures are self-referred services: the GP/FP not only orders them but also performs and bills for them. Some US studies have demonstrated a link between higher use of a service and self-referral, particularly for diagnostic imaging,<sup>12-14</sup> electrocardiography<sup>12</sup> and physiotherapy.<sup>15,16</sup> Our study could not detect this behaviour because of lack of clinical information. Further study is needed to examine the appropriateness of self-referred ser-

vices performed by physicians with high-volume practices.

The likelihood of being a high biller was inversely proportional to physician supply, except in Metropolitan Toronto, which had the highest GP/FP supply of any DHC yet had a high proportion of high billers. Our previous research showed large regional variation in per-capita physician billings by DHC, the highest utilization rate being in Metropolitan Toronto.<sup>2</sup> One hypothesis deserving further study is that there are underserved communities in Toronto, such as ethnic minorities. Nonetheless, the high expenditures associated with high billers and their effect on regional variation suggest that these physicians warrant closer scrutiny.

The 6% of high-billing GP/FPs practising as quasi-specialists in our study tended to be foreign graduates practising outside Toronto. Virtually all had been practising at least 7 years after graduation from medical school. These findings are consistent with the hypothesis that many of these physicians are foreign-trained specialists holding a general licence but not Canadian specialty certification. OHIP regulations permit physicians to bill fee

**Table 1: Characteristics of high- and lower-billing general practitioners and family physicians (GP/FPs) in Ontario in 1994-95**

Characteristic	No. (and %) of physicians				GP/FPs who billed > \$35 000 to \$400 000 n = 8445	Multivariate analysis: odds ratio (and 95% confidence interval)	
	GP/FPs who billed > \$400 000*					High-volume primary care GP/FPs n = 178	All GP/FPs who billed > \$400 000 n = 219
	Quasi-specialists n = 14	Procedurists n = 27	High-volume primary care GP/FPs n = 178	All n = 219			
Recent graduate	0 (0.0)	2 (7.4)	20 (11.2)	22 (10.0)†	1520 (18.0)	0.68 (0.41-1.13)	0.60 (0.37-0.95)
Age ≥ 60 yr	1 (7.1)	3 (11.1)	4 (2.2)	8 (3.6)†	1089 (12.9)	0.09 (0.03-0.25)	0.16 (0.08-0.32)
Female	2 (14.3)	2 (7.4)	12 (6.7)	16 (7.3)†	2204 (26.1)	0.21 (0.12-0.38)	0.23 (0.14-0.39)
Foreign graduate	7 (50.0)‡	7 (25.9)	63 (35.4)	77 (35.2)†	1849 (21.9)	1.85 (1.33-2.56)	1.77 (1.31-2.38)
Resident of Metropolitan Toronto	3 (21.4)	12 (44.4)	71 (39.9)	85 (38.3)†	2415 (28.6)	16.89 (7.27-39.25)	11.26 (5.44-23.31)
No. of GP/FPs per capita in DHC§						0.45 (0.38-0.60)	0.53 (0.44-0.65)

\*Quasi-specialists had practice profiles similar to those of certain specialists, procedurists derived most of their billings from performing certain procedures, and high-volume primary care GP/FPs derived most of their billings from typical GP/FP services (e.g., office visits). Source: Ontario Health Insurance Plan (OHIP) 1994-95 data, National Physician Database.

†Different from lower-billing GP/FPs (Fisher's exact test,  $p < 0.01$ ).

‡Different from lower-billing GP/FPs (Fisher's exact test,  $p < 0.05$ ).

§DHC = district health council. Continuous variable; for every increase of 1 physician per 1000 population in the district health council, the likelihood of being a high-volume primary care GP/FP decreases according to the odds ratio noted in the table.

**Table 2: Differences in patient visits between high-volume primary care GP/FPs and lower-billing GP/FPs**

Type of visit	High-volume primary care GP/FPs		GP/FPs who billed > \$35 000 to \$400 000	
	Average no. in 1994-95	Estimated daily volume*	Average no. in 1994-95	Estimated daily volume
Office assessment†	13 607	56.7	4 624	19.3
Visit for psychotherapy and counselling‡	631	2.6	455	1.9
Hospital visit	568	2.4	325	1.4
Nursing-home visit	442	1.8	209	0.9
House call	317	1.3	129	0.5
Emergency visit	481	2.0	403	1.7
Average billings	\$454 256	-	\$179 229	-

\*Assumes 240 working days per year.

†Includes mini, minor, intermediate, general and preoperative assessments, consultations (full and limited) and prenatal visits.

‡Includes psychotherapy, counselling, hypnosis and mental health interviews. For group psychotherapy or counselling, one visit is counted for each group session.

codes not generally associated with their specialty. However, quasi-specialists are restricted by the discretion of hospitals to grant them privileges. Remote community hospitals faced with relative shortages of specialists may be more likely to grant privileges, which would account for the low concentration of these physicians in Toronto.

Procedurists were concentrated in Toronto, and more than half billed primarily for physiotherapy (fee code G467). This fee code is nonspecific and is delegable to other health care providers under supervision. There are few stipulations governing the type of treatment eligible for remuneration and no standards for level of personnel training. In Ontario, physiotherapy services may be provided in hospital clinics, OHIP-funded physiotherapist clinics, private physiotherapist clinics or physician-run clinics billing fee code G467. Because of stringent controls on hospital budgets and OHIP-funded physiotherapist clinics, the widespread use of fee code G467 by physicians may represent a response to pent-up demand for these services. In this case, however, it may be more appropriate to expand OHIP-funded physiotherapist clinics and outpatient hospital services or to regulate the physician-run clinics under the Independent Health Facilities Act. These measures might ensure that services are performed by trained physiotherapists using certified equipment and that funds reserved for physiotherapy and medical services are directed toward their intended purpose. Because the use of the physician fee-for-service pool for physiotherapy has been unplanned, the activity of high-billing GP/FPs may have resulted in greater regional disparities in access to physiotherapy, with large service volumes in Toronto.

Other procedurists performed tests such as sleep studies, audiology and electromyography, which have major fixed costs and marginal costs with each additional test. The fee schedule, however, remunerates procedures on a per-unit basis intended to cover marginal costs plus a portion of fixed costs. High-volume practices may be more efficient, as fixed costs are spread out over more tests, thereby reducing average costs. If this is the case, policy-makers could consider volume discounts for certain procedurists to share in these economies of scale, as is currently done with commercial laboratories.<sup>17</sup>

Our study had several limitations. Administrative data provide scant information on the quality of care and clinical complexity. Furthermore, although we examined aggregate service volumes of individual physicians, we could not identify the number of patients in each physician's practice or visits per patient. There were 2 potential sources of error. The postal code of practice does not necessarily correspond to the location of services provided; a physician may register a Toronto home address yet work in Mississauga. The Ontario Ministry of Health is currently examining new methods to track physician activity

by service location. Another potential error is that 2 or more physicians may be using the same billing number. This is unlikely, however, because OHIP specifically prohibits such behaviour and because this would unnecessarily subject billings to threshold reductions.

In summary, a total of 2.5% of GP/FPs in Ontario billed over \$400 000 in 1994–95. Most of these physicians attained these billing levels by performing high numbers of office visits and office-based procedures; a small proportion were quasi-specialists or single-service providers. Because these physicians account for a large share of expenditures, they will likely continue to be subject to intense scrutiny by policy-makers. Further research is needed into the average time spent per patient by these physicians, the quality of the physician-patient interaction and the appropriateness of potentially self-referred procedures performed in their offices.

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