Factors influencing the frequency of visits by hypertensive patients to primary care physicians in Winnipeg

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Abstract

Background: As part of a recent project focused on needs-based planning for generalist physicians, the authors documented the variety of practice styles of primary care physicians for managing patients with hypertension. They investigated the validity of various explanations for these different styles and the relative contributions of physician and patient characteristics to the rates at which hypertensive patients contact physicians.

Methods: Retrospective descriptive study using regression analyses to simultaneously adjust for the influence of key patient and physician characteristics. Hypertensive patients in Winnipeg were identified using Manitoba physician claims data for fiscal years 1993/94 and 1994/95. Patients were included if they were 25 years of age or more and had at least one physician contact in both 1993/94 and 1994/95 during which hypertension was diagnosed. In addition, the primary care physician had to be the physician that the patient contacted most frequently in 1993/94 and 1994/95 and with whom she or he had at least 2 visits during this period. Only patients of family practitioners whose practice included at least 50 hypertensive patients were included.

Results: To control for the effects of large samples and to validate the results, the authors conducted all analyses for half (6282) the sample of hypertensive patients who met the study criteria (12 563). A total of 132 primary care physicians who met the study criteria were identified. The patients made on average 9.3 ambulatory visits to physicians (both general practitioners and specialists) in 1994/95. Those who had more complex medical conditions (i.e., were formally referred to a specialist), those who had 3 or more serious medical problems and those who had been admitted to hospital made more visits to their primary care physician than those without these characteristics. After these and other key patient characteristics were controlled for, a primary care physician's patient recall rate in 1993/94 was strongly related to the number of visits his or her hypertensive patients made to all doctors for any reason in 1994/95. Physicians with high patient recall rates (i.e., who saw their hypertensive patients on average 8 or more times) in 1993/94 also had high recall rates in 1994/95.

Interpretation: Because patient characteristics most strongly associated with high visit rates were those reflecting patient illness, policy measures aimed at patients (e.g., user fees and deinsurance) do not appear to be the appropriate policy tool for dealing with high visit rates. Given the influence of a physician's patient recall rate on patient visit patterns, physician profiling and feedback may prove more appropriate.

Résumé

Contexte : Dans le cadre d'un projet récent de planification fondée sur les besoins pour les omnipraticiens, les auteurs ont décrit l'éventail des styles d'exercice de médecins de première ligne dans le traitement des patients hypertendus. Ils ont

analysé la validité de diverses explications de ces différents styles d'exercice et l'incidence relative des caractéristiques des médecins et des patients sur la fréquence à laquelle les patients hypertendus consultent un médecin.

Méthodes : Étude descriptive rétrospective fondée sur des analyses de régression afin de tenir compte simultanément de l'incidence des principales caractéristiques des patients et des médecins. On a repéré des patients hypertendus de Winnipeg en utilisant les données tirées des demandes de paiement des médecins du Manitoba pour les exercices 1993–1994 et 1994–1995. Les patients ont été inclus s'ils avaient 25 ans et plus et s'ils avaient consulté, en 1993–1994 et 1994–1995, au moins une fois un médecin qui avait diagnostiqué une hypertension. Le médecin de première ligne devait en outre être le médecin consulté le plus souvent par le patient en 1993–1994 et en 1994–1995 et consulté au moins deux fois au cours de cette période. Seuls les patients des médecins de famille voyant au moins 50 patients hypertendus dans leur pratique ont été retenus.

Résultats : Pour contrôler les effets d'échantillons importants et valider les résultats, les auteurs ont effectué toutes les analyses sur la moitié (6282) de l'échantillon de patients hypertendus qui satisfaisaient aux critères de l'étude (12 563). On a repéré au total 132 médecins de première ligne qui répondaient aux critères de l'étude. Les patients ont eu en moyenne 9,3 consultations ambulatoires auprès des médecins (omnipraticiens et spécialistes) en 1994–1995. Ceux qui avaient des problèmes médicaux plus complexes (c.-à-d. qui ont été présentés officiellement à un spécialiste), ceux qui avaient trois problèmes médicaux graves ou plus et ceux qui avaient été hospitalisés ont consulté plus souvent leur médecin de première ligne que ceux qui n'avaient pas ces caractéristiques. Compte tenu de ces caractéristiques et d'autres caractéristiques clés des patients, on a établi un lien solide entre le taux de rappel des patients des médecins de première ligne en 1993–1994 et le nombre de fois que leurs patients hypertendus ont consulté tous les médecins pour n'importe quelle raison en 1994–1995. Les médecins qui ont enregistré des taux élevés de rappel des patients (c.-à-d. qui ont reçu leurs patients hypertendus en moyenne huit fois ou plus) en 1993–1994 avaient aussi des taux élevés de rappel en 1994–1995.

Interprétation : Comme les caractéristiques des patients que l'on relie le plus étroitement à la fréquence élevée des consultations étaient celles qui reflétaient leur état morbide, les mesures stratégiques qui visent les patients (comme les frais d'utilisation et la désassurance) ne semblent pas représenter le bon moyen stratégique pour s'attaquer aux taux élevés de consultation. Étant donné l'influence que le taux de rappel d'un médecin a sur la fréquence des consultations de ses patients, l'établissement du profil des médecins et la rétroaction peuvent convenir davantage.

It is widely recognized that large variations exist in how often people visit their physicians and how often physicians see individual patients. Among a myriad of concerns about controlling and reducing health care expenditures, patient visit rates have increasingly attracted attention.[1] The assumption behind suggestions such as copayments for physician visits, which have been eschewed in Canada but have been shown to reduce visit rates in the United States, and deinsurance, which requires the patient to pay for certain services, is that patients tend to overuse physicians' services because they are "free." User fees are supposed to deter frivolous visits. The other side of the coin is that research here and elsewhere has shown that physicians also play an important role in determining visit rates and, therefore, expenditure patterns.[2,3] Although the first visit in any episode is typically at the patient's discretion, second and subsequent contacts involve input from both patient and physician.

As part of a recent project focused on needs-based planning for generalist physicians, we documented the variety of practice styles of primary care physicians for managing hypertensive patients.[4] All hypertensive patients were seen by their physician at least twice during the year, thus meeting criteria for minimal care, but at the low end of recent recommendations (once every 3 to 6 months).[5,6] Some physicians saw their patients fewer than 5 times a year, and others saw them 8 or more times on average. Because each physician had at least 50 hypertensive patients, and most had 75 or more, patient characteristics seemed an unlikely explanation for these different recall styles. Many explana-

tions for the differences in patient recall rate were suggested: younger, less-experienced physicians feel the need to see their patients more often; physicians practising in core areas of the city have a sicker, more complex patient load; physicians who have a very high volume lack the requisite time to educate their patients about how to manage on their own; and physicians who desire high incomes encourage frequent repeat visits.

In this article, we investigated the validity of these various explanations and the relative contributions of physician and patient characteristics to the rates at which hypertensive patients contact physicians. We limited our study to patients and primary care physicians residing and practising in Winnipeg, a city of 650 000.

Methods

Patient selection

For our purposes, if a patient had at least one physician contact in both fiscal years 1993/94 and 1994/95 during which hypertension (*International Classification of Diseases*, ninth revision[7] code 401) was diagnosed and listed on the claim filed for physician payment, we identified this person as hypertensive. Manitoba claims data offer a reliable method for identifying patients with chronic disease.[8] The overall agreement between clinically measured hypertension and that measured by such data is high (85%) (kappa value 0.60).[9] A patient was included in the study only if her or his physician met the study criteria (see Physician characteristics) and if the physician was the one that the patient contacted most frequently in 1993/94 and 1994/95 and with whom she or he had at least 2 visits during this period. All Winnipeg residents aged 25 years or more were eligible for the study, with the exception of residents of nursing homes. Most of the patients (78%) made 60% or more of their visits to the physician identified as the one most frequently contacted. We identified and included 132 such physicians meeting the study criteria. The physician characteristics identified for the statistical analyses were those of the doctor the patient contacted most frequently. This patient–physician link was confirmed when we replicated the analyses, weighting the observations by the proportion of the patient's visits to the physician most frequently contacted, thus diminishing the influence of weaker links on the results. Physician contact patterns of all Winnipeg residents aged 25 years and more (*n* = 416 207) were used for comparison purposes.

Patient characteristics

The key variable of interest was the total number of unreferred ambulatory physician visits each patient made during 1994/95, regardless of location (home, clinic or office), as documented by claims filed for physician payment. We counted all visits, regardless of physician and diagnosis. Although only one diagnosis is recorded on each claim, hypertension was by far the most frequent reason for the physician contacts, accounting for 34% of them. Diabetes mellitus (3%) and chronic ischemic heart disease (2%) were the next most frequent reasons for contact.

We identified age and sex from Manitoba Health's patient registry. The overall health status of a patient was indicated by the number of referrals for consultation to another physician (0, 1, or 2 or more) and whether the patient was admitted to hospital in 1993/94 (the year before the target year), in 1994/95, during both years or not at all. Since the presence of coexisting conditions may complicate the treatment of patients with hypertension, we also considered whether the patient had 3 or more serious medical problems among those found to be associated with 4 key dimensions of health status[10] (see reference 11 for a full description). If a patient had at least 2 visits in 1993/94 during which one of these conditions was recorded, he or she was judged to have this condition. Given that patients with mental health problems are particularly high users of physician services,[12] we also established whether the patient had 0, 1, or 2 or more visits in 1993/94 for a variety of such problems. Since there may be advantages for hypertensive patients who usually see the same physician,[13,14] we used the measure recommended as appropriate for the study of care for chronic conditions, the sequential nature of provider continuity.[15] When a referral was made to a second physician or if 2 physicians were practising in the same group, we captured the concept of continuity of the medical record by proceeding as if the same physician were seen. Because continuity measures are sensitive to the number of visits (the more visits, the lower the continuity, because more different care providers tend to be seen), we based continuity scores on patterns of contact during 1993/94.

Acknowledging the strong relation between socioeconomic characteristics and health status, we used 1991 census public-use tapes to identify the mean household income of the patient's neighbourhood of residence. We determined household income by aggregating census data at the geographic unit of the enumeration area, each area having an average population of 700. The areas were ranked from poorest to wealthiest and then grouped into 5 population quintiles, each containing 20% of the city's population. Each Winnipeg resident was linked to an area by residential postal code and assigned a quintile income rank.

Physician characteristics

We included physicians if they were general or family practitioners, had practised at least 10 months during both

1993/94 and 1994/95, and had practices that included at least 50 patients with hypertension during 1994/95.

The patient recall rate was estimated on the basis of the mean number of visits each physician had with his or her hypertensive patients (regardless of diagnosis) during 1993/94 and, hence, was unlinked from the number of visits the patient made during the target year (1994/95). Since a patient's total number of physician contacts in 1994/95 included those to their most frequently seen physician as well as to all other physicians (both general practitioners and specialists), there is no fixed relation between a patient's visit rate and his or her physician's patient recall rate. Patients tended to average about 3 or 4 visits per year more than their physician's recall rate.

The physicians' age and sex were identified from Manitoba Health's physician registry. We estimated daily patient load using the mean number of patients seen per day on every day in 1994/95 that the physician saw at least 2 patients. This measure was highly correlated with the mean number of patients seen on the physician's 30 busiest days of the year ($r = 0.91$) and with quarterly measures of daily patient load ($r \geq 0.97$).

We based relative income on 1994/95 figures for total payments received by physicians before the calculation of office or other expenses. Payment for ambulatory visits constituted 78% of the income of Winnipeg general practitioners. Physicians were classified into 3 groups: those billing less than a full-time-equivalent general practitioner (i.e., less than $97 000), those billing at an average to relatively high rate ($97 000 to $217 400) and those in the highest billing group (over $217 400).

Practice location was determined by the area of the city that most of a physician's patients came from. Location was classified into 2 categories: the poorest parts of the city (the inner and outer core and old St. Boniface), the health of whose residents is particularly poor, and elsewhere.

Statistical analysis

We used multiple linear regression and logistic regression analyses to simultaneously adjust for the influence of all covariates on patient visit patterns. Covariates were selected in a stepwise manner with the use of the SAS GLM procedure (version 6.12, SAS Institute Inc., Cary, NC). The assumptions of normalcy and equal variance of the multiple linear model were satisfied by performing logarithmic transformation on the data for frequency of visits. Also, using the SAS LOGISTIC procedure in a stepwise manner, we identified the most significant predictors for the odds that a patient would make 10 or more visits. For ease of interpretation and comparison, all variables were recorded categorically, except the continuity of care measure.

To control for the effects of large samples and to validate the results, we conducted all analyses and reported all results for half (6282) the sample of hypertensive patients who met the study criteria (12 563). Cross-validations of the final models were made on the second half of the sample to ensure the stability of our observations. We studied the stability of patient recall rates over the 2 years using the linear model theory (SAS GLM procedure).

Results

Characteristics of physicians with different recall styles

Most physicians saw their hypertensive patients fewer than 6 times in 1993/94. Of the 132 physicians, 28 averaged fewer than 5 visits, 42 averaged 5 visits, 40 averaged 6 visits, 10 averaged 7 visits, and 12 averaged 8 or more visits. We found no relation between patient recall rate on the one hand and physician's age, relative billings, average daily patient load or practice location on the other. There was a significant relation between patient recall rate and physician's sex: there were more female physicians in the highest recall rate group than expected (7 v. 3) ($\chi^2 = 7.7$, $p = 0.02$).

Characteristics of physicians and patients related to high patient visit rates

The 6282 hypertensive patients included in the study made an average of 9.3 (range 2 to 80) ambulatory visits in 1994/95 (by comparison, Winnipeg's population aged 25 years or more averages 5.1 visits per person). Of the 6282 patients 37.2% had 10 or more contacts with physicians; 95% made fewer than 20 visits, and 75% made fewer than 12 visits.

Almost all the identified characteristics of the patients and of the physician they saw most frequently were related to the patients' 1994/95 ambulatory visit rate and the likelihood that they made 10 or more visits to physicians in that year (Table 1). Patients with 3 or more serious health conditions made on average 19.1 visits during the year, and those who were admitted to hospital or referred to other physicians for consultation averaged many more visits than those without these characteristics. Patients with high, as opposed to low or medium, levels of continuity of care tended to have fewer physician contacts. A physician's patient recall rate was also strongly related to the number of visits his or her hypertensive patients made during 1994/95. Patients of physicians whose recall rate averaged fewer than 5 visits had on average 8.0 contacts with all physicians in 1994/95. In contrast, patients of physicians whose recall rate averaged 8 visits or more per year had on average 12.1 contacts.

Analyses adjusting for all covariates

When other factors were controlled for, the number of formal referrals for consultation a patient received during the year was the strongest predictor of the number of ambulatory (nonconsultative) visits she or he had with physicians. This variable alone, likely reflecting the complexity of a patient's medical condition, explained 12.8% of the total variance in the number of visits made by hypertensive patients. After all other patient and physician characteristics listed in Table 1 were controlled for, the second most important explanation was the recall style of the primary care physician, that is, the mean number of visits the physician had with his or her hypertensive patients (regardless of diagnosis), which explained an additional 4.4% of the total variance. The third most important variable was whether the patient had 3 or more serious medical conditions, which explained an additional 3.6%. The only other factor that explained more than 2% of the variance in visit patterns (2.2%) was another indicator of the patient's medical condition, whether he or she had a hospital stay in 1993/94, 1994/95 or both years.

Other patient characteristics significantly related to the number of physician contacts included (in order according to the additional variance explained) the continuity of care, the number of mental health visits, age and neighbourhood income level. These variables explained an additional 4.0% of the variance. Physician's age was also predictive of the number of contacts (patients of physicians aged 50 to 59 years had a higher visit rate than those of physicians aged 40 to 44 years). The total model explained 27.3% of the variance.

The same set of characteristics that we identified as important in predicting the total number of visits were important factors distinguishing patients

Table 1: Characteristics of patients with hypertension and their primary care physicians in Winnipeg associated with high rates of ambulatory visits to all physicians in fiscal year 1994/95

Characteristic	No. of patients	Average no. of visits to all physicians in 1994/95	% of patients making ≥ 10 visits in 1994/95
PATIENTS			
All	6282	9.3	37.2
Age, yr			
25–44	531	8.6	30.9
45–64	2296	8.8	33.1
65–74	1998	9.3	37.1
75–84	1216	10.3	46.5
≥ 85	241	10.1	43.6
Sex			
Male	2563	8.9	34.9
Female	3719	9.6	38.8
Neighbourhood income level*			
Lowest	1232	10.2	44.0
Medium low	1287	9.1	38.6
Middle	1278	9.3	36.4
Medium high	1248	8.9	33.2
Highest	1237	8.9	33.8
No. of referrals in 1994/95			
0	4264	8.0	27.6
1	1362	10.7	50.4
≥ 2	656	14.7	72.0
No. of hospital admissions			
0	5131	8.6	32.3
1993/94 only	481	10.9	49.3
1994/95 only	530	13.3	64.7
1993/94 and 1994/95	140	14.9	72.1
≥ 3 serious medical problems			
No	6070	8.9	35.5
Yes	212	19.1	86.8
No. of mental health visits in 1993/94			
0	5432	8.9	34.6
1	511	10.4	47.6
≥ 2	339	14.6	63.4
Continuity of care in 1993/94			
Low	657	9.8	38.7
Medium	1944	10.2	44.5
High	3681	8.7	33.1
PATIENTS' PHYSICIANS			
Age, yr			
28–34	402	9.2	32.8
35–39	770	9.6	37.7
40–44	1555	9.2	36.8
45–49	906	9.4	36.5
50–54	735	9.6	40.1
55–59	734	9.0	38.1
≥ 60	1180	9.2	36.9
Sex			
Male	5385	9.3	37.3
Female	897	9.4	36.6
Average no. of visits with own hypertensive patients in 1993/94			
≤ 4	1072	8.0	28.3
5	1973	8.7	32.2
6	2152	9.3	37.0
7	384	11.0	47.4
≥ 8	701	12.1	59.8
Average no. of patients seen per day in 1994/95			
≤ 24	1530	8.9	35.4
25–29	1178	9.4	38.7
30–34	1560	8.8	34.1
35–39	935	9.6	38.0
≥ 40	1079	10.2	41.8
Relative income			
< average	2027	9.1	36.3
Average to high	3271	9.1	35.8
Highest	984	10.5	43.7
Practice location			
Lower income neighbourhood	4155	9.2	36.8
Elsewhere	2127	9.4	37.9

*Each quintile contained 20% of the city's population.

Table 2: Results from multiple linear regression and logistic regression predicting ambulatory physician visits in 1994/95

Characteristic	Total visits*		Patient made ≥ 10 visits†	
	Mean difference‡	p value	Odds ratio	p value
PATIENTS				
Age, yr				
25–44 (reference)	0.00	–	1.00	–
45–54	0.04	NS	1.06	NS
55–64	0.07	0.002	1.21	NS
65–74	0.15	< 0.001	1.73	NS
≥ 85	0.07	0.047	1.42	NS
Sex				
Male (reference)	0.00	–	1.00	–
Female	0.05	< 0.001	1.10	NS
Neighbourhood income level				
Lowest (reference)	0.00	–	1.00	–
Medium low	–0.08	< 0.001	0.82	0.026
Middle	–0.05	0.006	0.74	0.001
Medium high	–0.08	< 0.001	0.68	< 0.001
Highest	–0.08	< 0.001	0.67	< 0.001
No. of referrals in 1994/95				
0 (reference)	0.00	–	1.00	–
1	0.23	< 0.001	2.48	< 0.001
≥ 2	0.48	< 0.001	5.79	< 0.001
No. of hospital admissions				
0 (reference)	0.00	–	1.00	–
1993/94 only	0.09	< 0.001	1.44	< 0.001
1994/95 only	0.24	< 0.001	2.23	< 0.001
1993/94 and 1994/95	0.24	< 0.001	2.61	< 0.001
≥ 3 serious medical problems				
No (reference)	0.00	–	1.00	–
Yes	0.43	< 0.001	5.77	< 0.001
No. of mental health visits in 1993/94				
0 (reference)	0.00	–	1.00	–
1	0.11	< 0.001	1.65	< 0.001
≥ 2	0.24	< 0.001	2.34	< 0.001
Continuity of care in 1993/94§	–0.25	< 0.001	0.40	< 0.001
PATIENTS' PHYSICIANS				
Average no. of visits with own hypertensive patients in 1993/94				
≤ 4 (reference)	0.00	–	1.00	–
5	0.07	< 0.001	1.24	0.024
6	0.14	< 0.001	1.69	< 0.001
7	0.29	< 0.001	2.59	< 0.001
≥ 8	0.41	< 0.001	4.89	< 0.001
Age, yr				
40–44 (reference)	0.00	–	1.00	–
28–34	0.04	NS	0.91	NS
35–39	0.03	NS	1.03	NS
45–49	0.02	NS	1.04	NS
50–54	0.09	< 0.001	1.40	0.001
55–59	0.07	0.002	1.44	< 0.001
≥ 60	0.03	NS	1.09	NS

Note: NS = not significant.
*Model R^2 = 27.3.
†Model C statistic = 0.76.
‡A patient whose physician has a recall rate of 8 or more visits averages 0.41 more visits (on a logarithmic scale) than one whose physician has a recall rate of fewer than 5 visits (the reference category). Given the logarithmic scale, the mean difference should be interpreted as follows. After adjustment for relevant variables, the number of visits by a patient whose physician has a recall rate of 8 or more visits is 1.51 (i.e., is the exponential of 0.41) visits higher than that of a patient whose physician has a recall rate of fewer than 5 visits.
§Continuity score is a continuous variable.

who made 10 or more visits from those who made fewer than 10 visits in the logistic regression analyses (Table 2). Patients who were likely to be sicker (i.e., who had 2 or more referrals to specialists) had 5.79 times higher odds ($p < 0.001$) to make 10 or more ambulatory visits than patients who had no referrals, whereas patients with 1 referral had 2.48 times higher odds ($p < 0.001$). The odds of making 10 or more ambulatory visits were 5.77 times higher ($p < 0.001$) for patients with 3 or more serious health conditions than for those with no other medical problems. Patients with high continuity of care had lower odds (odds ratio 0.40) ($p < 0.001$) of making 10 or more ambulatory visits than those with low continuity of care. The physician's recall style was again important in determining the likelihood that a patient would make 10 or more visits: when all other factors were controlled for, patients whose physician averaged 8 or more visits with their hypertensive patients had 4.89 times higher odds ($p < 0.001$) of making 10 visits or more than patients whose physician averaged fewer than 5 visits. As a physician's recall rate decreased, so did the odds that his or her patients would make 10 or more visits. When the regression analyses were replicated with the data for the second half of the sample, the results were robust, which reinforced the stability of all the key findings.

Stability of physician recall patterns

Although it was not surprising that indicators of the severity of a patient's condition were strongly predictive of his or her physician contact rate, it was somewhat less expected that the practice style of physicians, measured by their patient recall pattern, would be so strongly related to patient visit patterns. To determine whether we were measuring an enduring characteristic of physician practice style, we

compared the physicians' recall rates in 1993/94 with those in 1994/95. We found that, for 70% of the physicians whose hypertensive patients averaged 8 or more ambulatory visits (to all physicians) in 1994/95, their hypertensive patients averaged 8 or more ambulatory visits in 1993/94 also; an additional 20% had patients who averaged 7 visits in 1993/94. There was a strong positive relation across all physicians in the year-to-year recall pattern: the recall rate in 1993/94 explained 60% of the variance in the rate in 1994/95 ($r = 0.77$, $p < 0.001$). Because every physician had at least 50 (and most had 75 or more) hypertensive patients on whom to base the recall rate, the influence of individual patients' visit patterns would have been minimal.

Interpretation

The first step toward policy development in the debate over how best to discourage overuse of physician services is an understanding of the factors that actually, rather than rhetorically, influence patient visit rates. Gaining such an understanding is critical because the alternatives frequently considered — user fees and deinsurance — blindly discourage necessary services as often as unnecessary services,[16] especially for the poor.

We found that a group of patients with a chronic disease, who may be expected to have more frequent contact with physicians, averaged 9 visits a year (51% of the Winnipeg population 25 years and older have 3 or fewer visits per year). Underservicing is clearly not an issue for hypertensive patients. But are user fees the appropriate policy tool for dealing with "overservice"? Patients with complex conditions (requiring 1 or more specialist consultations), several coexisting conditions and hospital admissions had the highest visit rates. In such cases the application of user fees to discourage visits would be misguided.

In our study the patient recall rate of physicians, even after adjustment for the types of patient treated, was among the strongest elements influencing how frequently patients contacted physicians. This finding suggests that policy initiatives that target physicians, including physician profiling,[17] are needed to raise awareness among those with high patient recall rates that their practices are quite different from those of their colleagues. We are not alone in providing evidence of the strong influence physician practice style has on many aspects of a practice.[18–20] In fact, in a national Angus Reid survey of physicians and consumers, 70% of physicians and 63% of consumers agreed that "some doctors encourage patients to come for more office visits than necessary."[21]

In summary, the number of visits patients make to the doctor is determined largely by how ill patients are and by their doctor's practice style. Policies such as user fees and deinsurance appear particularly misguided given this evidence.

References

1. Demers M. Frequent users of ambulatory health care in Quebec: the case of doctor-shoppers. *CMAJ* 1995;153:37-42.
2. Henke CJ, Epstein WV. Practice variations in rheumatologists' encounters with their patients who have rheumatoid arthritis. *Med Care* 1991;29(7):799-812.
3. Grumbach LP, Jamison W. Physician payment in the 1990s: factors which will affect the future. *Annu Rev Public Health* 1990;11:291-318.
4. Roos NP, Roos NP, Fransoo R, Bogdanovic B, Friesen D, Frohlich N, et al. *Needs-based planning for Manitoba's generalist physicians (June 1996)*. Winnipeg: Manitoba Centre for Health Policy and Evaluation; 1996.
5. The Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V). *Arch Intern Med* 1993;153:154-83.
6. Palmer RH, Clark LE, Lawthers AG, et al. *DEMPAQ: a project to develop and evaluate methods to promote ambulatory care. Quality final report 1994*. Glen Burnie (MD): Delmarva Foundation for Medical Care Inc.
7. Commission on Professional and Hospital Activities. *International classification of diseases, ninth revision, clinical modification*. Ann Arbor (MI): The Commission; 1992.
8. Hammarstrand KM, Young TK, Roos NP. Trends in prevalence and incidence of diabetes among adults in Manitoba, 1974 and 1983. *Chronic Dis Can* 1991;12(3):25-6.
9. Muhajarine N, Mustard C, Roos LL, Young TK, Gelskey D. Comparison of survey and physician claims data for detecting hypertension. *J Clin Epidemiol* 1997;50(6):711-8.
10. Pope GC. Medical conditions, health status, and health services utilization. *Health Serv Res* 1988;22:857-77.
11. Cohen MM, MacWilliam L. Measuring the health of the population. *Med Care* 1995;33(12 Suppl):DS21-42.
12. Johnson J, Weismann MM, Klerman GL. Service utilization and social morbidity associated with depressive symptoms in the community. *JAMA* 1992;267:1478-83.
13. Plasencia A, Ostfeld AM, Gruber SB. Effects of sex differences in awareness, treatment, and control of high blood pressure. *Am J Prev Med* 1988;4:315-26.
14. Shea S, Misra D, Ehrlich MH, Field L, Francis CK. Predisposing factors for severe, uncontrolled hypertension in an inner-city minority population. *N Engl J Med* 1992;327:776-81.
15. Steinwachs DM. Measuring provider continuity in ambulatory care: an assessment of alternative approaches. *Med Care* 1979;18(2):551-65.
16. Brooke R. Health insurance and uninsurance. *JAMA* 1991;265:2998-3002.
17. Welch HG, Miller ME, Welch WP. An analysis of inpatient practice patterns in Florida and Oregon. *N Engl J Med* 1994;330:607-12.
18. Davidson W, Molloy DW, Somers G, Bedard M. Relation between physician characteristics and prescribing for elderly people in New Brunswick. *CMAJ* 1994;150:917-21.
19. Smith DM, Martin DK, Langefeld CD. Primary care physician productivity: the physician factor. *J Gen Intern Med* 1995;10:495-503.
20. Henke CJ, Epstein WV. Practice variations in rheumatologists' encounters with their patients who have rheumatoid arthritis. *Med Care* 1991;29(7):799-812.
21. Swift D, Skelly A. Heartbeat from the heartland. In: The Medical Post 1995 National Survey of Doctors. *Med Post Survey Suppl* 1995;fall:8,24,41.

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