Practice Style Differences Between Family Physicians And Internists

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Abstract: ***Background:*** **Because an estimated 70 percent of all medical care expenditures are generated by physicians, evaluation of specialty practice styles is essential to learn what changes in policies governing physician training, service delivery, and patterns of medical practice would promote cost containment.**

Methods: **We examined the 1981 and 1985 National Ambulatory Medical Care Survey for seven primary care diagnoses to compare practice style differences between family physicians and internists and to look for changes in family physicians' practice styles between 1981 and 1985.**

Results: **Family physicians referred fewer patients in 1985 and spent 3 to 10.5 minutes less per patient encounter than internists. Clinical laboratory testing, electrocardiogram (ECG) ordering, and radiographic examinations differed significantly between the two groups in 1981 and 1985 for some diagnoses. In 1981, family physicians did Papanicolaou smears 2.2 times more often than internists during general medical examinations; however, in 1985, there was no difference. Between 1981 and 1985, family physicians ordered significantly more laboratory tests and ECGs for some diagnoses but had no change in the number of radiographs ordered or referrals. For six diagnoses, they spent more time with a patient encounter in 1985 than in 1981.**

Conclusions: **Family physicians and internists appear to be more alike in practice style, but significant differences remain. These differences, as well as changing practice styles of family physicians, have implications for training and health care resource distribution. (J Am Board Fam Pract 1991; 4:399-406.)**

The nature, quality, and efficacy of health care services provided by different primary care specialties are important for health policy determination. Persons in the US make an average of 2.7 office visits per year to private physicians.[1] The specialties of general and family practice, general internal medicine, and general pediatrics together account for 58.6 percent of all ambulatory visits to physicians and 65.9 percent of all visits for problems included in the 15 most common diagnoses.[2] Because an estimated 70 percent of all medical care expenditures are generated by physicians, evaluation of specialty practice styles is essential in determining policies governing the training of physicians, the delivery of physicians' services, and the modification of current patterns of medical practice.[3]

Differences in practice style among family physicians, general practitioners, and specialists in internal medicine have been previously reported. Noren, et al.[4] examined data from the 1977 National Ambulatory Medical Care Survey (NAMCS) of office-based physicians. Compared with family physicians-general practitioners, internists were 40 percent more likely to refer patients, 223 percent more likely to order radiographic examinations, and 173 percent more likely to order laboratory tests. Internists spent an average of 18.4 minutes per visit compared with 13 minutes per visit for family physicians-general practitioners.

Eisenberg and Nicklin[5] looked at medical services utilization by Medicaid recipients using a 20 percent random sample of claims vouchers. Their sample included 336 physicians with 55,420 patient visits. To control for severity of disease, outpatient records of patients hospitalized with heart disease, pulmonary disease, or diabetes mellitus were studied and utilization assessed. Eisenberg and Nicklin found that when case mix was not controlled, internists ordered 7.9 laboratory tests per visit, family physicians ordered 3.1 laboratory tests per visit, and general practitioners ordered 1.0 laboratory tests

Submitted, revised, 5 June 1991.

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per visit ($P = 0.028$). After controlling for case mix, internists ordered significantly more laboratory tests then general practitioners, but not family physicians.

Greenwald, et al.[6] analyzed the University of Southern California (USC) Medical Activities and Manpower Projects in conjunction with the United States Bureau of Health Professionals Area Resource File. The USC study looked at patient encounters with physicians in 27 specialties. Six "tracer" conditions were studied: ischemic heart disease, essential benign hypertension, asthma, upper respiratory tract infection and nasopharyngitis, tonsillitis and pharyngitis, and pneumonia. Controlling for organizational surroundings, geographic location, method of payment, personal characteristics of the physician, and personal characteristics of the patient, Greenwald, et al. reported that family physicians spent significantly less time on encounters for ischemic heart disease, hypertension, asthma, nasopharyngitis, upper respiratory tract infection and tonsillitis, and pneumonia than did internists. Family physicians utilized all procedures less often than internists and ordered fewer chest radiographs for pneumonia than internists. Board-certified physicians of both specialties reported shorter patient encounters than did noncertified physicians, but the two groups did not differ in the delivery of specific diagnostic and therapeutic procedures.

Bertakis and Robbins[7] randomly assigned 520 patients to either an internal medicine clinic or a family practice clinic. At a 2-year follow-up, they found that patients randomized to the internal medicine clinic were referred more often to other clinics than were those randomized to the family practice clinic ($P < 0.01$). No statistically significant difference in cost of laboratory tests ordered was observed; however, more laboratory tests were generated by the patients randomized to the internal medicine clinic, primarily because of their higher referral pattern and greater use of the emergency department and acute care clinics.

Cherkin, et al.[8] compared residency-trained family physicians with general internists. They found internists were twice as likely to order blood tests, blood counts, chest radiographs, and electrocardiograms; internists spent more time with patients and referred and hospitalized them more often.

The composition of family practice has changed over the years since the original Noren, et al. study.[9] In 1977, 3294 family physicians were board certified; in 1981, 10,444; and in 1985, 19,467 family physicians were board certified. Only 12 percent of general and family physicians were residency trained in 1979.[10] As of 1985, nearly 50 percent of all family physicians were residency trained. The increasing percentage of residency-trained family physicians may have an impact on style of practice and, therefore, services offered to their patients. In contrast with the Greenwald, et al. findings of decreased time spent with patients by board-certified physicians, Cherkin, et al.[11] found that residency-trained family physicians saw fewer patients per hour and spent more time per patient encounter than did non-residency-trained physicians.

In summary, previous studies have shown differences in practice style between internists and family physicians, especially in referral rates and laboratory test ordering. We analyzed the 1981 and 1985 NAMCS data to learn how the patterns of practice documented by Noren, et al. have changed since 1977. Practice styles of family physicians were compared with those of internists for each year of data collection. In addition, comparisons between 1981 and 1985 practice styles of family physicians were examined. We hypothesized that family physicians' practice styles would resemble internists' practice styles more in 1985 than 1981.

Methods

The 1981 and 1985 National Ambulatory Medical Care Survey (NAMCS) data tapes were used for this study. The NAMCS data provide a nationwide statistical sample of patient encounters with office-based physicians. The physicians were randomly selected from a roster maintained by the American Medical Association and the American Osteopathic Association. Physicians were assigned to a specialty in the practice in which they claimed to spend most of their professional time. General internists were treated as a specialty distinct from the various medical subspecialties.

Physicians completed the survey instrument for a sample of their patients (20 to 100 percent based on practice size) seen during the 1-week survey period. This survey instrument, described previously,[12] included information on patient de-

Table 1. Number of Patient Encounters.

Diagnostic Cluster	Family Practice		Internal Medicine	
	1981	1985	1981	1985
Total	2810	3139	1818	1535
General medical examination	553	592	299	145
Upper respiratory tract infection	665	762	189	207
Hypertension	927	916	764	645
Lower respiratory tract infection	265	335	128	128
Ischemic heart disease	194	214	316	277
Urinary tract infection	149	238	67	57
Asthma	57	82	55	76
Hypertension and ischemic heart disease	36	33	73	33

scriptors, physician's diagnosis, diagnostic or therapeutic services, disposition, and duration of visit.

Only physicians listed by the American Medical Association were selected for this study; specialties were family practice, general practice, and internal medicine. NAMCS did not require physicians to indicate whether they were board certified or residency trained, and they were free to choose the category of practice in which they spent the most time. Consequently, the specialties of family practice and general practice were combined in a single group, family practice. There were 792 family physicians and 448 internists available in the data set; no physicians were excluded. Patients whose encounters were included in our analysis were older than age 14 years and were not referred to the physician.

The diagnostic cluster coding system[13] was created using International Classification of Diseases (ICD.9)[14] codes from the 1981 NAMCS data. Diagnostic clusters are groupings of diagnoses that bring together conditions that have essentially similar pathophysiologic characteristics or call for similar clinical responses on the part of the physician. Seven diagnostic clusters were examined: general medical examination (the most common diagnoses in the 1977 NAMCS data), three acute diagnoses, and three chronic diagnoses. The acute diagnoses (ranked by cluster frequency) were acute upper respiratory tract infections (2), acute lower respiratory tract infections (11), and urinary tract infections (19). The chronic diagnoses were hypertension (4), ischemic heart disease (13), and asthma (29). The primary unit of analysis in this study was the patient encounter.

Statistical analysis was done using the SPSS/PC statistical package.[15] Noncontinuous variables were analyzed with the chi-square method and continuous variables were analyzed with an analysis of variance. An alpha level of 0.05 was considered significant, and an alpha level less than 0.15 was considered a trend.

The data are presented by the type of service ordered at the time of a patient encounter. Within each service, data comparing family physician practice styles in 1981 and 1985 are presented first, followed by data comparing family physicians and internists in 1981 and 1985.

Results

We examined 4628 patient encounters from the 1981 data and 4674 patient encounters from the 1985 data (Table 1). These encounters represent 63.3 percent of all patients seen by family physicians for these seven diagnoses and 83.4 percent of all patients seen by internists in the NAMCS study. The mean patient age for family physicians was significantly lower than for internists in 1981; in 1985 there were no differences. Male patients were seen more frequently by internists in 1981; in 1985 there were no differences.

Referral Rates

Changes in the rate of referral per patient encounter were examined for family physicians between 1981 and 1985. There was a trend for family physicians to refer more patients in 1985 (Table 2).

The rate of referral of family physicians and internists to other physicians was examined for the seven diagnostic clusters (Tables 3 and 4). There was a trend in 1981 for family physicians to refer less often for general medical examination;

Table 2. Percentage of Patient Encounters at Which Service Was Ordered, Family Practice, 1981 and 1985.

Diagnostic Cluster	Referral		Laboratory Test		Radiograph Examination		Electrocardiogram	
	1981	1985	1981	1985	1981	1985	1981	1985
General medical examination	0.4	1.4†	42.7	57.4*	6.9	9.6†	6.7	5.4
Upper respiratory tract infection	1.5	1.2	20.0	28.2*	1.8	2.1	0.6	0.3
Hypertension	0.8	0.9	18.6	26.9*	3.3	4.6	3.6	6.7*
Lower respiratory tract infection	3.6	6.5	10.6	17.6*	15.8	18.2	1.1	1.2
Ischemic heart disease	2.0	5.0	21.6	35.0*	5.7	5.6	16.5	26.2*
Urinary tract infection	1.1	1.7†	75.8	90.8*	2.0	2.5	1.3	0.0
Asthma	0.0	0.0	5.3	12.2	1.8	6.1	0.0	0.0

*$P < 0.05$.
†$0.05 < P < 0.15$.

however, there were no significant differences in referral rates for the other six clusters. In 1985 significant differences were seen in rates of referral for upper respiratory tract infection, acute lower respiratory tract infection, and ischemic heart disease.

Clinical Laboratory Tests

Family physicians ordered significantly more clinical laboratory tests in 1985 than in 1981 for all categories except asthma (Table 2). The percentage of visits in which laboratory tests were ordered increased from 25.9 percent to 37.0 percent. Laboratory test ordering for hypertension increased by 1.4-fold and for ischemic heart disease by 1.6-fold.

In 1981 family physicians ordered significantly fewer clinical laboratory tests for upper respiratory tract infection, hypertension, and acute lower respiratory tract infection than did internists (Table 3). By 1985 the only significant difference was for asthma, for which family physicians ordered two-thirds fewer tests than internists. A trend remained, however, for family physicians to order fewer clinical laboratory tests for hypertension (Table 4).

Radiograph Examinations

The change in family physicians ordering radiographs from 1981 to 1985 was not significant for any of the seven diagnostic clusters. There was a trend, however, to order more radiograph examinations in 1985 for general medical examinations (Table 2).

Family physicians ordered significantly fewer radiograph examinations than internists in 1981 for general medical examination, upper respiratory tract infection, hypertension, acute lower respiratory tract infection, and asthma (Table 3). In 1985 there were no longer significant differences in ordering radiographs for acute lower respiratory tract infection and asthma, but the differences for general medical examination, upper respiratory infection, and hypertension remained (Table 4).

To eliminate effects of screening mammograms, only male encounters for general medical examinations were examined for the percentage

Table 3. Percentage of Patient Encounters at Which Service Was Ordered, Family Practice (FP) and Internal Medicine (IM), 1981.

Diagnostic Cluster	Referral		Laboratory Test		Radiograph Examination		Electrocardiogram	
	FP	IM	FP	IM	FP	IM	FP	IM
General medical examination	0.4	1.7†	42.7	42.1	6.9	17.1*	6.7	15.7*
Upper respiratory tract infection	0.6	1.1	20.0	28.6*	1.8	6.3*	0.6	2.1†
Hypertension	1.5	1.7	18.6	26.2*	3.3	7.1*	3.6	13.6*
Lower respiratory tract infection	0.8	1.6	10.6	25.8*	15.8	28.9*	1.1	7.0*
Ischemic heart disease	3.6	2.5	21.6	25.0	5.7	8.5	16.5	32.9*
Urinary tract infection	2.0	3.0	75.6	74.6	2.0	7.5†	1.3	1.5
Asthma	0.0	0.0	5.3	9.1	1.8	14.5*	0.0	1.8

*$P < 0.05$.
†$0.05 < P < 0.15$.

Table 4. Percentage of Patient Encounters at Which Service Was Ordered, Family Practice (FP) and Internal Medicine(IM), 1985.

Diagnostic Cluster	Referral		Laboratory Test		Radiograph Examination		Electrocardiogram	
	FP	IM	FP	IM	FP	IM	FP	IM
General medical examination	1.4	2.8	57.4	53.1	9.6	18.6*	5.4	22.1*
Upper respiratory tract infection	0.7	3.4*	28.2	32.9	2.1	9.2*	0.3	1.9*
Hypertension	1.2	1.9	26.9	31.2†	4.6	7.9*	6.7	13.0*
Lower respiratory tract infection	0.9	3.9*	17.6	23.4	18.2	23.3	1.2	6.2*
Ischemic heart disease	6.5	2.5*	35.0	31.4	5.6	10.8†	26.2	32.7†
Urinary tract infection	5.0	5.3	90.8	89.5	2.5	5.3	0.0	1.8
Asthma	0.0	2.6	12.2	32.9*	6.1	11.8	0.0	6.6†

*$P < 0.05$.
†$0.05 < P < 0.15$.

of radiographs ordered. In 1981, 9.4 percent of general medical examinations had radiographs ordered by family physicians, 18.2 percent of visits ($P < 0.05$) had radiographs ordered by internists. In 1985 no significant differences were found.

Electrocardiogram

Electrocardiogram (ECG) ordering by family physicians increased from 1981 to 1985 for hypertension and ischemic heart disease (Table 2). Family physicians and internists differed significantly in the rate of ECGs ordered in both 1981 and 1985 (Tables 3 and 4). A 4.1-fold difference in number of general medical examination visits in which ECGs were ordered existed in 1985; a 1.9-fold difference was found for hypertension visits.

Duration

The number of minutes a patient spent face to face with a physician was significantly different for family physicians between 1981 and 1985. There was increased time spent with patients for all seven diagnostic clusters from 1981 to 1985 (Table 5). Internists either remained the same or decreased time with patients.

There were significant differences in time spent per patient encounter between family physicians and internists for all diagnoses (Table 5). For each of the seven diagnostic clusters in both years, family physicians spent significantly less time with their patients than did internists. In 1985 the differences ranged from 1.4 minutes for hypertension to 4.5 minutes for general medical examination.

To examine effects of location of practice, family physicians' duration of visit was examined for 1985. Physicians practicing in metropolitan areas spent a mean of 14.3 minutes compared with 12.8 minutes for nonmetropolitan practice locations ($P = 0.0000$).

Papanicolaou Smear

Data on women aged 20 to 50 years seen by their physician for general medical examination were examined to determine the rate of Papanicolaou

Table 5. Family Practice (FP) and Internal Medicine (IM), Mean Duration of Visit (Minutes per Visit).

Diagnostic Cluster	1981		1985	
	FP	IM	FP	IM
General medical examination	15.84	25.31	17.43	21.92
Upper respiratory tract infection	12.04	14.97	12.12	14.20
Hypertension	13.68	17.73	14.79	16.21
Lower respiratory tract infection	12.59	19.07	13.75	16.52
Ischemic heart disease	16.21	20.62	17.06	19.00
Urinary tract infection	12.94	17.12	13.65	17.14
Asthma	13.91	18.21	14.57	18.02
Mean	13.75	19.23*	14.59†	17.14*

*$P < 0.0001$, FP versus IM.
†$P < 0.0001$, FP 1981 versus FP 1985.

smear performance. In 1981 family physicians did Papanicolaou smears during 52.3 percent of their general medical examination visits compared with a 23.3 percent rate for internists. By 1985 internists had increased Papanicolaou smear testing to 42.3 percent of patients seen for general medical examination; the rate for family physicians was 46.1 percent.

Hypertension and Ischemic Heart Disease

A group of patients with both a diagnostic cluster of hypertension and ischemic heart disease was examined for the previously discussed tests and referral rates (Table 6). For this subgroup there was no significant difference between family physicians and internists for age, sex, admission rate, or referral rate. In 1981 there were significant differences between family physicians' and internists' ordering patterns for clinical laboratory and ECG, but not for radiographs. In 1985 there were no significant differences for use of clinical laboratory, ECG, or radiographs.

Discussion

The differences in practice style between internists and family physicians have important implications for training of physicians and for resource planning. The data presented here confirm findings from previous studies showing significant differences in utilization of medical services by physicians. Our study findings suggest that for seven common entities of primary care, family physicians refer less often, spend less time with patients, and order fewer diagnostic studies in some categories than internists. From 1981 to 1985, however, there were changes in the way family physicians practiced.

Table 6. Percentage of Patient Encounters at Which Service Was Ordered for Hypertension and Ischemic Heart Disease.

	1981		1985	
	FP (n = 36)	IM (n = 73)	FP (n = 36)	IM (n = 33)
Sex (% male)	33.3	43.8	54.5	51.5
Age (years)	68.7	66.8	68.9	69.3
Laboratory test ordered	19.4	47.9*	30.3	36.4
Radiograph examination ordered	0.0	8.2	3.0	12.1
Electrocardiogram ordered	5.6	26.0*	18.2	24.2
Referral rate	2.8	1.4	0.0	0.0
Admitted to hospital	2.8	0.0	0.0	0.0

*$P < 0.05$

Referral rates for these seven diagnoses were very low, but there was a trend for family physicians to refer less often than internists. This trend was not true for ischemic heart disease, which may reflect changes in family medicine training, differences in hospital privileges, or the current malpractice liability milieu. Family physicians tended to refer more often in 1985 than in 1981. The increased training of family physicians may be impacting referral rates by exposing family physicians to a more referral-oriented medical community or by family physicians caring for sicker patients overall.

Significant differences exist between family physicians and internists in the amount of time they spent in face-to-face contact with patients. Family physicians are more likely to practice in rural areas and may need to spend less time with patients in order to meet patient needs. Family physicians practicing in nonmetropolitan areas in this study did spend less time with each patient encounter than family physicians practicing in metropolitan areas. Family physicians charge less per visit and may increase the number of patients seen to increase their income. There are implications for amount of time spent with patients: if the mean duration of visit for family physicians is 14 minutes, they can see 35 patients in an 8-hour day. If internists spend a mean of 20 minutes for each visit, they can see only 24 patients per day. For areas with high patient volume needs, a family physician is more likely to accommodate a higher patient load.

Diagnostic testing was done significantly less often by family physicians than internists. From a cost-containment viewpoint, this finding has important implications. For example, for general medical examinations, family physicians ordered radiographs during 9.6 percent of patient visits; internists ordered radiographs during 18.6 percent of visits. Assuming that 10 percent of the approximately 250 million people over the age of 14 years in the United States had general medical examinations with radiograph ordering at the rate of this study, at an approximate cost per examination of $50, then $112 million a year more would be spent if those examinations were done by internists compared with family physicians. The NAMCS data do not delineate the type of radio-

graph ordered; however, the most likely study during a general medical examination would be a screening chest radiograph. Many studies have reported no benefit from the routine screening chest radiographs.[16,17] After elimination of women patients to exclude screening mammograms, significant differences between radiograph ordering for men are present in 1981 but are absent in 1985.

Internists are taught to value comprehensive diagnostic evaluation and to regard their discipline as the general diagnostic specialty in medicine.[4] This value system may influence their ordering of diagnostic tests. Obler and LaForce[18] have shown that the general physical examination in the asymptomatic patient rarely yields new, significant diagnoses and is not a cost-effective screening activity. Future training will need to provide sharper measures for comprehensive evaluation of the patient.

This study is cross-sectional and does not reflect testing done over a period of time. It is possible that family physicians order the same number of diagnostic tests in a given period of time but order fewer tests during any one patient encounter. For acute visits, however, it is unlikely that diagnostic testing would occur at another visit, yet differences are present for upper respiratory tract infection and lower respiratory tract infection. Both groups of physicians tend to see patients the same number of times per year.[19,20]

As the percentage of residency-trained family physicians increases, there may be an increase in the amount of diagnostic test ordering resulting from exposure to other specialists during training. From 1981 to 1985, family physicians increased their rate of ordering clinical laboratory tests and ECGs for hypertension and ischemic heart disease visits. Family medicine residency programs will need to be aware of the influence of specialty-based training on diagnostic effort and to determine whether these changes are warranted.

In 1981 family physicians were doing Papanicolaou smears during general medical examinations in more than one-half of their female patient encounters compared with internists doing these examinations one-quarter of the time. By 1985 internists had increased their rate of Papanicolaou smears to 42.3 percent, probably reflecting a growing awareness of the need for total primary care for women. Many internists receive limited exposure to gynecology during their training, however, and may not be prepared to care for many women's problems. As more internists provide primary care, training programs must address the educational aspects of women's medical care. Managed health care planners also will need to recognize the need for comprehensive care of women.

Differences in the severity of illness in patients may account for differences in practice style between family physicians and internists. To address this issue, we selected a group of patients who were given both the diagnoses of hypertension and ischemic heart disease and compared family physicians with internists. There were no significant differences in age or sex, and the same patterns prevailed for family physicians ordering fewer clinical laboratory tests, radiographs, and electrocardiograms. Although the numbers are quite small, this finding suggests that the previous findings are accurate and not a reflection of differences in severity of illness. Others have found a similar level of severity of illness among the patients of family physicians and internists.[17,21]

Another question raised by this study is the impact of training on family physician practice style. Although 25 percent of the family practice resident's time is spent exclusively in the ambulatory setting, a large amount of training still occurs in the hospital on specialty services. In this study family physicians are referring more often, spending more time with patients, and ordering more tests, although still at a lesser rate than internists. Differences between family physicians and internists may disappear as the number of residency-trained family physicians increases; nevertheless, Cherkin, et al.[19] also found differences in family physicians and internists when only residency-trained physicians were compared.

Our study is limited to seven common diagnoses in primary care. We did not examine other diagnoses that family physicians and internists encounter, and the differences between the specialties may not exist for other diagnoses. An important proportion of the primary care physicians' time will, however, be spent with patients with these problems.

Conclusions

This study confirms earlier studies that report differences in practice style between family physi-

cians and internists. There were significant differences in referral rates, time spent with a patient, and laboratory test ordering for some diagnoses. The practice style of family physicians has changed from 1981 to 1985, however, and the implications of these differences and changes need recognition by both specialties.

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