Health Care Delivery

The Hospital Role of Family Physicians

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This paper examines the hospital role of a random sample of all general and family physicians in the state of Washington. Of the 287 physicians in our sample, 81% admitted at least one patient to hospital during the two-week study period, and the average physician admitted six patients. The majority of the admitting diagnoses fell within the realm of internal medicine. Residency-trained and board-certified respondents were more likely to admit patients to hospital, and residency-trained and rural practitioners were much less likely to refer patients to other physicians for hospital care than their urban counterparts. Residency-trained physicians, in particular, were much more likely to practice hospital obstetrics than those without formal residency training.

These data demonstrate the broad and significant hospital role of the family physician. Given the increased scope and intensity of hospital practice of residency-trained family physicians, and barring major changes in admitting privileges or new regulatory constraints, we predict that this group of physicians will continue to have a significant inpatient role in the United States.

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Family practice is a discipline in rapid flux. In 1931 general practitioners constituted 83% of all physicians.[1] By 1967 that percentage had declined to 21% and general practice appeared to be slated for extinction.[2] Only the initiation of approved residency training in family medicine—the lineal descendant of general practice in the United States—prevented the total disappearance of this type of medical practitioner.

In 1980, for the first time in 50 years, the number of American physicians who considered themselves to be general or family physicians increased.[3] At present, 13% of graduating medical students enter accredited programs in family medicine.[4] In 1980 general and family physicians accounted for a third of all ambulatory visits—an amount that was threefold more than the contribution of any other specialty to ambulatory care.[5] Family physicians care for a wider spectrum of the population and are the most frequent source of ambulatory care for all age groups except children under age 17.[6]

But family practice is not just an ambulatory care specialty. General practitioners in the United States have traditionally been active in the inpatient setting, and the average family physician spends about a quarter of his or her professional time in the hospital setting.[7] Despite the importance of inpatient care, the optimal hospital role of the family physician is controversial. The increasing complexity of inpatient medical care has restricted the domain of the generalist, and in certain parts of the country there have been attempts to exclude family physicians from portions of hospital practice.[8] The appropriate role of family practitioners is the subject of ongoing debate, the resolution of which will have a profound impact on how the discipline is defined and the role it plays in American medicine.

The purpose of this study is to examine the content of the hospital practices of general and family physicians in one state. Family practice is an office-based discipline, but the majority of family physicians take care of hospital patients. In an earlier article we studied the determinants of hospital admission rates of family physicians and documented the discretionary nature of the decision to admit patients.[9] This study examines in detail a random sample of all general and family physicians in the state of Washington in an attempt to determine the diagnoses of the patients they admit to hospital and the spectrum of diagnostic entities for which they assume responsibility in the hospital.

Methods

The universe from which the sample was drawn consisted of all professionally active, office-based general practitioners and family physicians in the state of Washington as defined by the American Medical Association (AMA) masterfile. These criteria were met by 1,001 physicians in January 1978—17% of all active physicians in the state. Of these physicians, 394

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were randomly selected for the study and 287 participated, yielding a response rate of 72.8%. Respondents did not differ significantly from the sample universe on the basis of age, sex, US citizenship or residency training; the sample studied did include a significantly greater proportion of physicians who were board certified or located in rural parts of the state, or both.

Each physician studied was contacted first by letter and subsequently by phone and asked to participate in a study of patterns of hospital admissions. The phone interviews were conducted by a trained interviewer and consisted of a verification that the physician met the study criteria and a brief series of questions about the scope of the physician's practice, the number of years the physician had been in his or her current practice and the list of hospitals where the physician admitted patients.

Primary data were collected through the use of two patient logs that were maintained by the physician's receptionist or nurse, an ambulatory patient log and a hospital admission log. The ambulatory log recorded the number of patients by age and sex encountered by the physician in the outpatient setting during two-week study intervals spread throughout 1979 to eliminate seasonal bias. The hospital admission log recorded data about every admission *initiated* by the physician during the study period and included the following information: (1) patient's age; (2) patient's sex; (3) patient's place of residence; (4) primary admitting diagnosis assigned at time of hospital admission; (5) primary source of payment for hospital care; (6) name and location of the hospital to which the patient was admitted; (7) whether the patient was cared for by the admitting physician or was referred to another physician for hospital care; (8) if referred, the specialty of the physician providing the hospital care.

The primary data were supplemented with three types of secondary data:

- The AMA masterfile provided information about the physician's background and training.
- The Area Resource File of the United States Department of Health and Human Services, combined with information from the Center for Health Statistics of the Washington State Department of Social and Health Services, provided demographic and health services data for the counties of Washington State where the physicians worked.
- The American Hospital Association's Guide to the Health Care Field provided information about the characteristics of the hospitals in Washington State to which our physician sample admitted patients.

All the hospital admission data were reviewed on receipt by the senior author and any ambiguities immediately resolved by calling the admitting physician. The primary admitting diagnoses were coded by a certified medical records librarian using the *International Classification of Diseases, 9th Edition* (ICD-9) system. Because the ICD classification system contains thousands of individual rubrics, diagnoses were grouped into 92 distinct diagnostic clusters that bring together conditions that have essentially similar pathophysiologic characteristics or that call for similar clinical responses on the part of physicians; this technique has been described in detail in other publications.[10,11]

In order to further examine the spectrum of diagnoses with which family physicians dealt in the hospital setting, we further grouped the diagnostic clusters into skill domains. A skill domain was defined as that group of diagnoses that traditionally falls within the domain of a particular specialty. Skill domains provide a summary of the composition of the hospital practice of a primary care physician and can be determined using admitting diagnoses. Six skill domains were created for this study: internal medicine, surgery, obstetrics, orthopedics, psychiatry and pediatrics. Table 1 illustrates the concept of skill domains by listing the most frequent diagnostic clusters that fell within each of these categories in this study. The pediatric group differs from the rest in that it is defined as all admissions of children 16 years old and younger, rather than by diagnosis.

Every diagnostic cluster was assigned to one and only one skill domain. The majority of the diagnoses could be easily categorized; diagnostic clusters that might fall within the domain of more than one specialist were assigned to the most likely category by a panel of primary care physicians and specialists. It was possible to successfully classify 98% of the 1,661 hospital admissions initiated by our sample of physicians.

TABLE 1.—*Construction of Skill Domains: Examples of the Diagnostic Clusters Incorporated in Each Domain*

Skill Domain	*Diagnostic Cluster*
Internal Medicine	Malignant neoplasm
	Pneumonia
	Myocardial infarction
	Cerebrovascular accident
	Cardiac arrhythmia
	Chest pain
	Ischemic heart disease
	Diabetes mellitus
	Congestive heart failure
	Diarrheal disease
	Chronic obstructive pulmonary disease
	Urinary tract infection
Surgery	Inguinal hernia
	Head injury
	Appendicitis
	Abnormal menstrual bleeding
	Gastrointestinal obstruction
	Tonsillectomy
Obstetrics	Normal pregnancy
	Complicated delivery
Nonsurgical Orthopedics	Back pain
	Fractures/dislocations
Psychiatric	Anxiety/depression
	Alcoholism
Pediatrics (all admissions younger than 16 years of age)	Pneumonia
	Tonsillectomy
	Abdominal pain
	Diarrheal disease
	Head injury
	Appendicitis
	Upper respiratory tract infection
	Inguinal hernia
	Bronchitis
	Poisoning

Results

Hospital Admitting Patterns

Of the physicians who participated in this study, 94.4% were men, with an average age of 51 years. Some 42% were board certified, but only 12% had completed family practice residency training. There were 38% in solo practice, with 42% located in rural areas, using standard census designations of nonmetropolitan areas to determine rural location.

Of the 287 physicians in our sample, 87.8% admitted at least one patient to hospital during the two-week study interval. The average physician admitted 3.2% of all patients seen during the study, approximately three patients per week. Of the 1,661 patients admitted to hospital by the physicians in our sample, 12.7% were referred directly to another physician who assumed responsibility for the hospital portion of their care. Excluding those patients who were referred to other physicians for hospital care, 80.8% of the physicians in our sample admitted and provided hospital care for at least one patient during a randomly selected two-week period.

In all, 97.0% of all residency-trained and 95.0% of all board-certified family physicians cared for at least one patient in hospital during the two-week study period. Physicians without formal postgraduate training or board certification, by contrast, were slightly less likely to admit a patient to hospital during a two-week interval, a difference that was statistically significant. However, most physicians in all categories maintain a hospital practice. Practice configuration and rural or urban location had little impact on the proportion of family physicians who admitted at least one patient during the study period.

The list of the admitting diagnoses for this sample of physicians is shown in Table 2 and is quite similar to the hospital diagnoses of a national sample of family physicians reported elsewhere.[7] The single most common admitting diagnosis was normal pregnancy (9.9% of all admissions), followed by malignant neoplasm (4.4%), pneumonia (3.8%) and myocardial infarction (3.4%). Most of the patients were assigned a primary admitting diagnosis within the internal medicine skill domain, as shown in Figure 1.

Referral Rates

As noted above, 12.7% of hospital admissions initiated by the physicians in our sample were referred directly to some other physician for the hospital portion of their care. The referral rate differed considerably from one skill domain to another, with referral of 17.6% of patients with surgical diagnoses as compared with a 2% referral rate for patients with psychiatric diagnoses as shown in Figure 2. Most referrals were to internal medicine subspecialists (33.5%) and general surgeons (32%). The balance of patients were referred to surgical subspecialists (19.2%), general internists (4.4%), pediatricians (1%), psychiatrists (1%) and other family physicians (5.4%); the specialty of the physician accepting the referral was not recorded in 3.5% of the cases. Referral rates for individual diagnoses varied considerably, ranging from

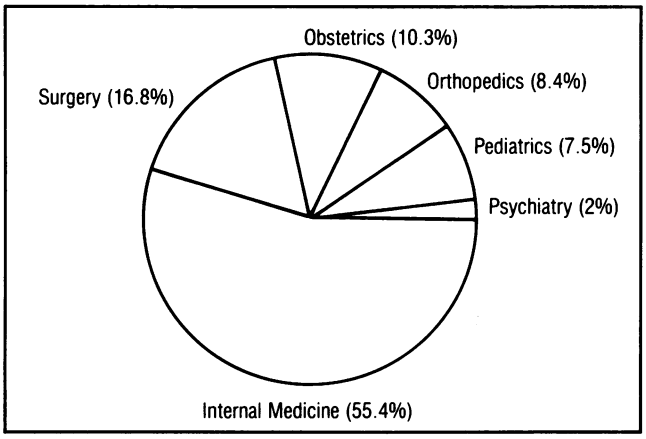

Figure 1.—Proportion of patients admitted to hospital with diagnoses in six skill domains (N = 1,621 admissions). Forty patients could not be assigned to a skill domain and are excluded from this analysis.

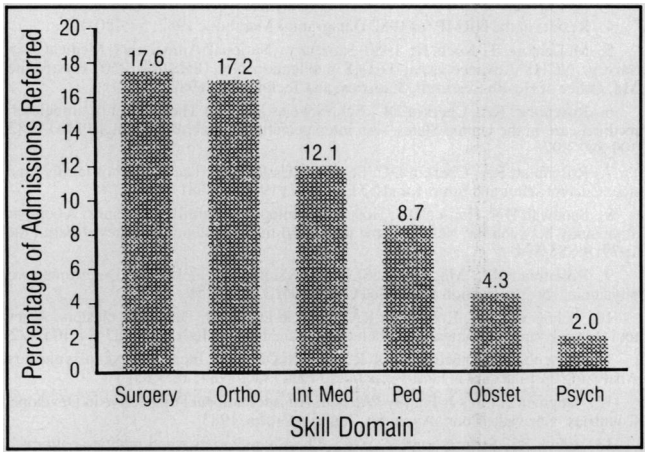

Figure 2.—Percentage of patients referred to other physicians for hospital care by skill domain (N = 1,621 hospital admissions).

TABLE 2.—*Most Frequent Primary Admitting Diagnoses for Washington State General and Family Physicians (287 physicians, 1,621 admissions)*

Rank	Diagnosis	Frequency N	Frequency %
1	Normal pregnancy	164	9.9
2	Malignant neoplasm	73	4.4
3	Pneumonia	63	3.8
4	Myocardial infarction	56	3.4
5	Cerebrovascular accident	52	3.1
6	Cardiac arrhythmia	45	2.7
7	Abdominal pain	44	2.7
8	Back pain/radiculopathy	43	2.6
9	Inguinal hernia	39	2.4
10	Fractures and dislocations (other than femur)	37	2.2
11	Chest pain	36	2.2
12	Ischemic heart disease	32	1.9
13	Diabetes	28	1.7
14	Congestive heart failure	27	1.6
15	Fracture of femur	26	1.6
16	Head injury	26	1.6
17	Anxiety/depression	25	1.5
18	Diarrheal disease	24	1.4
19	Chronic obstructive pulmonary disease	21	1.3
20	Appendicitis/appendectomy	20	1.2
21	Abnormal menstrual bleeding	17	1.0
22	Alcoholism	17	1.0
23	Gastrointestinal obstruction	17	1.0
24	Urinary tract infection	16	1.0
25	Peptic ulcer disease	16	1.0

50% for patients with the diagnosis of cholecystitis to no referrals for patients with the diagnosis of urinary tract infection.

Referral rates differed greatly between rural and urban physicians and between those who had taken a formal residency in family medicine and those who were not residency trained. Residency-trained physicians practicing in rural areas referred only 1.9% of the patients they admitted to hospital, as compared with a 22.6% referral rate for urban physicians without residency training, a difference that is statistically significant.

Skill Domains

The percentage of physicians who admitted at least one patient to hospital in each of the skill domains varied from 75.3% for internal medicine to 13.2% for psychiatry. Urban-rural differences were quite pronounced for almost all the skill domains, as seen in Figure 3. Rural general and family physicians are much more likely than their urban counterparts to admit their patients in all areas except internal medicine, where the rates are similar. Residency-trained physicians differed most from the nonresidency-trained group in their involvement with hospital obstetrics. Of the residency-trained physicians, 54.5% admitted at least one obstetric patient during the course of the study, as compared with 23.2% of the group without formal postgraduate training.

Discussion

What is the appropriate hospital role of family physicians? Traditionally, general practitioners and family physicians have maintained active hospital practices in the United States, in contrast to the much more limited hospital role of general practitioners in countries such as Britain.[12] Although there have been concerns about the future availability of hospital privileges for family physicians, surveys have shown that most family physicians are able to receive privileges for a broad spectrum of clinical activities.[13]

The structure of medical practice is changing rapidly. Hospital use is being constrained as third-party payers limit reimbursement for hospital care. Managed health care systems, and in particular capitated health insurance schemes, depend for their efficacy on the willingness of primary care physicians to act as gatekeepers, further constraining hospital use. Those patients who are admitted to hospital are sicker and require more sophisticated technological interventions than in earlier times. Although generalists have been active in hospitals in the past, it is possible that the changing nature of the hospital environment will limit their ability to provide care in the future. On the other hand, the reimbursement system may reward those physicians who are able to provide vertical continuity of care, following their patients from the outpatient to the inpatient environment, and being parsimonious in their use of resources in both settings.

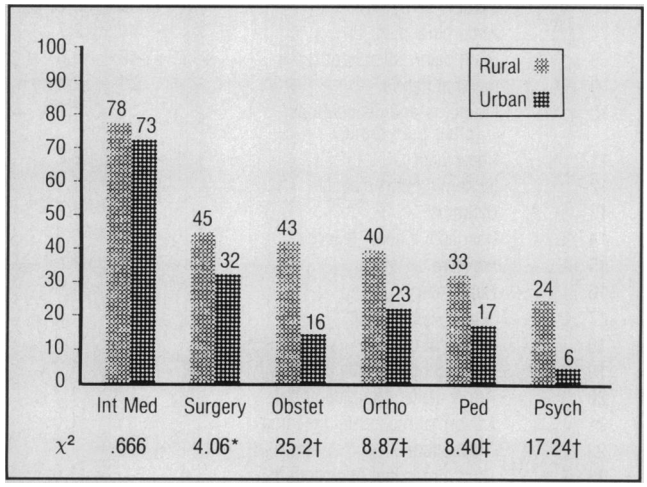

Figure 3.—Percentage of physicians who admitted one or more patients to hospital in each skill domain by practice location. *$P<.05$, †$P<.001$, ‡$P<.01$

This study provides some insight into the clinical content of the hospital practices of family physicians. Because it is a study of the hospital activity of a large random sample of all the family physicians in one state, it provides us with a window through which to observe this portion of the generalist's medical practice. It is clear from this study that family physicians during this study period were quite active in hospitals, with the typical physician admitting three patients per week, and only about 20% of the respondents admitting no patients under their care during a two-week period. Because we received data only on a two-week practice segment from each physician, these figures understate the hospital activity of family physicians. Most family physicians in Washington State maintain a hospital practice.

Residency training is associated with major differences in the hospital role of physicians, with residency-trained physicians about twice as likely to practice obstetrics and less likely to refer patients to other physicians when admitting a patient to hospital. Although this may be partially related to the younger age of residency-trained physicians, this group does appear to have a broader scope of both outpatient and inpatient practice. To the extent that residency-trained family physicians in Washington State represent the future of this discipline, hospital practice will remain an important component of the clinical repertoire of family practice.

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