

Utilization of Hospital Services A Comparison of Internal Medicine and Family Practice

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Five hundred twenty new patients were randomly and prospectively assigned to receive care in the Internal Medicine Clinic or Family Practice Clinic of a large university hospital. Previous analyses of outpatient data demonstrated that the frequency of visits to the clinic of primary care, acute care clinic, emergency room, and consultant clinics were all significantly higher for patients randomized to internal medicine compared with family practice.

In the present study, patients' charts were reviewed for information regarding hospitalizations. During the 3.4-year study period, there were a total of 61 hospital admissions for internal medicine (35 of 249 patients), and 58 for family practice (27 of 271 patients). Age (mean 47 years) and sex of patients in both groups were equivalent. The average total cost of hospitalization for each patient was greater for those randomized to the Internal Medicine Clinic: \$7,193 for internal medicine patients as compared with \$5,764 for family practice patients. The professional costs per hospitalization showed greater variation: \$913 for Internal Medicine Clinic patients and \$629 for Family Practice Clinic patients. Internal Medicine Clinic patients had a longer mean length of hospitalization (7.5 days) when compared with that of Family Practice Clinic patients (6.3 days).

It can be concluded that in this clinical environment the hospitalization patterns are different for patients assigned to the Internal Medicine Clinic compared with the Family Practice Clinic: both cost and length of care for hospitalization are less for those followed by the Family Practice Clinic.

The concept of the primary care physician as gatekeeper to the health care system is currently being widely discussed. Although physicians are paid only 20 percent of the health care costs, they influence, directly or indirectly, 70 percent of all health care expenditures.¹ The physician orders laboratory tests, writes prescriptions, makes referrals to consultants, and decides to admit and discharge patients from the hospital. Hospitals account for 40 percent of the national health care bill.² Hospital care is in fact the single most expensive component of the health care budget, with hospital costs rising more rapidly than the overall rate of inflation or the costs of other medical services. It has been shown that hospitalization rates

differ greatly among physicians and that these differences are related to factors extraneous to the health status of the individual patients, suggesting that many hospitalizations are discretionary.³ Physicians are under increasing pressure to manage patients with judicious utilization of health care resources. The focus is no longer on the minority or outliers but rather on the practice patterns of the majority of physicians, since it is recognized that substantial savings are possible only when physicians move as a group in the direction of greater efficiency.⁴

Researchers have examined the practice styles of physicians in an effort to identify those styles that are cost efficient. Variations in treatment decisions and the use of resources have been attributed to such factors as specialty training, practice setting, and method of payment. Results of recent studies have found that internal medicine and family practice physicians utilize different diagnostic strategies for similar clinical problems.⁵⁻¹⁰ Noren and associates⁶ analyzed data from the National Ambulatory Medical Care Survey to compare the practice styles of general internists and family physicians—general practi-

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tioners. They found that internists spent more time per patient encounter, ordered more laboratory and x-ray studies, and were more likely to refer their patients to another physician or agency. Smith and McWhinney⁷ and Scherger et al⁸ used simulated cases to evaluate the diagnostic strategies of internists and family physicians. They found no significant differences in the final diagnosis reached by the two groups of physicians; however, there was a greater tendency for internists to select more physical examination items and order more laboratory tests. These observations that internists tend to spend more time and use more diagnostic and therapeutic procedures than family physicians were again noted by Greenwald and others⁹ using data from the University of Southern California Medical Activities and Manpower Projects and the United States Bureau of Health Professions.

Burkett¹⁰ demonstrated differences in health care utilization patterns among the primary care providers (family practice, internal medicine, general practice, and pediatrics) in an individual practice association–health maintenance organization (IPA-HMO) using a capitated payment system. Patients in the study were nonrandomized and able to self-select their primary provider. Of particular interest were the data that showed that internists had the highest hospitalization rate and the lowest number of primary visits per referral. The author stated that a lower ratio of primary visits per referral indicated a lesser reliance on services provided by the primary physician. On the other hand, family physicians had the lowest hospitalization rate and the highest number of primary visits per referral among the three adult primary care specialties. The results of this study suggested that internists rely more heavily on referral services and on inpatient care than do family physicians.

Hamburger and colleagues¹¹ studied practice styles in the hospital setting. They compared the treatment of diabetic ketoacidosis in a teaching hospital by internists and family physicians. The period of hospitalization was longer in the internal medicine group. In addition, the total number of laboratory tests and x-ray procedures ordered per patient per hospital day was higher for internists. Patients' serum and urine glucose values, however, were comparable in both groups at discharge.

It is important to note that the research methodologies used in the majority of previous studies may bias the results. In simulated clinical cases, an artificial test environment may be created, with physicians' answers reflecting ideal rather than actual practice behaviors.¹² Those studies reviewing existing practices may be attempting to compare patient populations that have been significantly skewed by self-selection.

In the present study, this bias was eliminated by randomly and prospectively assigning patients to receive their care in the Internal Medicine Clinic or Family Practice Clinic of a large university hospital. These patients were

then followed by residents in training under the supervision of board-certified internists or family physicians.

A previous analysis of the outpatient data was based on a review of the medical record for frequency of visits to primary care providers (internal medicine or family practice), emergency room, acute care clinic (a drop-in clinic run by the hospital for patients with non-life-threatening illnesses), and all clinics other than the two primary care clinics. The records were also reviewed for laboratory tests ordered. Frequency of visits to the clinic of primary care, emergency room, and acute care clinic, and of broken appointments was significantly higher for patients randomized to the Internal Medicine Clinic than for patients in the Family Practice Clinic. In addition, the median total annual cost of laboratory tests for patients followed by internal medicine physicians was significantly higher largely because of higher laboratory charges generated by the specialist consultants.

Over the study period, Internal Medicine Clinic patients had a significantly higher number of visits to all non-primary-care consultant clinics and specifically to the dermatology, obstetrics-gynecology, and general surgery clinics. It was concluded in that report that the ambulatory practice styles of internal medicine and family practice were different.¹³ This paper presents the results of a review of patients' charts for information regarding utilization of hospital services. The inpatient practice styles of internal medicine and family practice are compared.

METHODS

Research Design

Patients calling for new appointments at either the Internal Medicine Clinic or Family Practice Clinic at the University of California Davis Medical Center (UCDMC) were asked whether they had a preference for primary care provider. If patients had not previously been seen in either clinic and expressed no preference between internal medicine or family practice, they were referred for consideration in the study. If these patients were nonpregnant adults, they were randomly assigned to receive care in one clinic or the other (prenatal and pediatric patients were seen in Family Practice Clinic only and not included in the study). Patients were not excluded by type or severity of illness.

After a mean length of care of three and one-half years, the charts were retrospectively reviewed for inpatient data. These data included source of admission, admitting service, admitting and discharge diagnoses, and length of admission. The patients' billing records were also reviewed for total cost of hospital care (including room, nursing care, pharmaceuticals, laboratory tests, and other diagnostic and surgical procedures) and professional billing fees.

The Study Setting

The curriculum of both the family practice and internal medicine residency programs follows the general requirements for all residency training programs and the special essentials for their branch of medicine. Within the UCDMC Department of Internal Medicine, 12 out of 80 residents (15 percent) are in a primary care track, emphasizing ambulatory medicine.

The Family Practice Clinic and Internal Medicine Clinic respond differently to acute or urgent care needs of their assigned patients. During regular clinic hours, both advise patients to call or come in to the clinic rather than going directly to the emergency room or acute care clinic. After hours, Family Practice Clinic patients are told to telephone the on-call family practice resident regarding health questions. If the situation warrants it, the patient is then seen in the emergency room by the family practice resident. Internal Medicine Clinic patients go directly to the emergency room or acute care clinic for after-hours treatment. The internal medicine resident on call for the ward service does not normally answer telephone calls from outpatients or see them in the emergency room unless they are to be admitted to the hospital.

Patients may be hospitalized from a variety of clinical settings. They may be hospitalized, on an elective or acute basis, from their primary care clinic, a subspecialty clinic, or the emergency room. The patient is admitted to and followed by the appropriate hospital service. Both the Internal Medicine Clinic and the Family Practice Clinic have their own ward services and, whenever possible, patients are admitted directly to the ward service of their primary care provider. The attending physician on the family practice ward service routinely checks the daily admissions for those Family Practice Clinic patients on other ward services. Family Practice Clinic patients are then followed jointly by both the other ward service and the family practice service, or care is transferred to the family practice service. When joint care is given, the family practice ward team see the patient daily, discuss care given with others of the service team, and regularly write progress notes in the medical record. They provide continuity of care and information regarding the patient's social support system and home setting. In addition, the family practice resident who is the primary care provider for the patient in Family Practice Clinic is required to also follow the case in the hospital and after discharge. These procedures are not employed by the Internal Medicine Clinic.

Referrals of outpatients to subspecialty clinics at UCDMC can be initiated only by a primary care physician. Patients are not able to self-refer to the subspecialties of their choice. Once a referral has been made, consultant physicians are able to authorize both laboratory services and admissions to the hospital. Referrals of inpatients for consultant services within the hospital can be made only

by the clinical service that is caring for the patient. Consultant physicians typically suggest to the ward team, but do not themselves order diagnostic laboratory tests, procedures, pharmaceuticals, or special nursing. There are no explicit policies within the Internal Medicine Clinic encouraging referral of patients to departmental subspecialty clinics or consulting services for financial or educational purposes.

RESULTS

A total of 249 patients were followed in the Internal Medicine Clinic and 271 in the Family Practice Clinic. The mean length of follow-up in both clinics was 3.4 years from the time of the patient's first visit until final chart review (standard deviation Internal Medicine Clinic 0.73 years, Family Practice Clinic 0.63 years). The racial composition of the total patient population for the Internal Medicine and Family Practice clinics was equivalent, with approximately 60 percent white, 20 percent Hispanic, 15 percent black, and 5 percent Asian. The mean patient ages were 42 years old in the Internal Medicine Clinic and 40 years old in the Family Practice Clinic (not statistically different, *t* test). Fifty-one percent of the patients seen in the internal medicine group and 53 percent in the family practice group were female (not significant, chi-square test).

During the study period, Internal Medicine Clinic patients had 61 hospitalizations, and Family Practice Clinic patients had 58, for an annual hospitalization rate of 72 per 1,000 patient years for the Internal Medicine Clinic and 63 per 1,000 patient years for the Family Practice Clinic. Over the 3.4 years, 35 patients from the Internal Medicine Clinic (14 percent of the population) and 27 patients from the Family Practice Clinic (10 percent of the population) were hospitalized at least one time. Because of the skewed nature of the data, meaningful statistical analysis was not possible.

To try to understand the difference in hospitalization rate, patients' medical records were reviewed to see who referred the patient for hospitalization. The source of patient referral is listed in Table 1. There was no significant difference by chi-square test in the referral patterns for hospitalizations between the two clinics, but it should be noted that only 13 percent of patients were hospitalized directly from the outpatient clinics of their primary care providers. Fifty-four percent came through the emergency room, and 34 percent came from other providers. These other providers were usually subspecialists to whom the primary care provider had referred the patient.

Most of the patients were not actually hospitalized on the services of their primary provider. Table 2 lists the services to which patients were admitted. Only 7 percent of hospitalized Family Practice Clinic patients were ad-

TABLE 1. SOURCE OF HOSPITALIZATION

| Service | Primary Clinic No. (%) | Other Clinic No. (%) | Emergency Room No. (%) | Total No. (%) |
|-------------------|------------------------|----------------------|------------------------|---------------|
| Internal medicine | 7 (12) | 19 (31) | 35 (57) | 61 (100) |
| Family practice | 8 (14) | 21 (36) | 29 (50) | 58 (100) |
| Total | 15 (13) | 40 (34) | 64 (54) | 119 (100) |

TABLE 2. SERVICE TO WHICH PATIENTS WERE ADMITTED

| Service | Internal Medicine No. (%) | Family Practice No. (%) |
|---------------------------|---------------------------|-------------------------|
| Internal medicine | 22 (36) | 28 (48) |
| Orthopedics | 13 (21) | 3 (5) |
| General surgery | 8 (13) | 0 (0) |
| Obstetrics and gynecology | 4 (7) | 7 (12) |
| Gastroenterology | 4 (7) | 1 (2) |
| Otolaryngology | 3 (5) | 0 (0) |
| Neurology | 2 (3) | 0 (0) |
| Vascular surgery | 2 (3) | 0 (0) |
| Urology | 1 (2) | 5 (9) |
| Plastic surgery | 1 (2) | 1 (2) |
| Ophthalmology | 1 (2) | 0 (0) |
| Psychiatry | 0 (0) | 5 (9) |
| Family practice | 0 (0) | 4 (7) |
| Trauma surgery | 0 (0) | 2 (3) |
| Burn unit | 0 (0) | 1 (2) |
| Neurosurgery | 0 (0) | 1 (2) |
| Total | 61 (100) | 58 (100) |

mitted to the family practice ward service. Thirty-six percent of those patients under the care of the Internal Medicine Clinic were admitted to the medicine ward service. Forty-eight percent of the hospitalizations for Family Practice Clinic patients were actually admitted to the internal medicine service. The charts of these patients were individually reviewed in an attempt to explain this phenomenon. This review revealed that of the 28 admissions to the internal medicine service for Family Practice Clinic patients, 12 were to the coronary care unit, seven were to the hematology-oncology ward, six were to the general internal medicine ward, and three patients were admitted for elective cardiac catheterization. These units or services are those to which family practice staff do not admit.

The cost of hospital care was compared for the two groups of patients. As seen in Figure 1, the average annual per patient cost of hospital care for Internal Medicine Clinic patients was \$599, and \$360 for Family Practice Clinic patients. These charges can be divided between the charges for hospital services and physician services. Internal Medicine Clinic patients spent \$517 per patient per year on hospital charges and \$82 per patient per year on in-hospital physician charges. Family Practice Clinic pa-

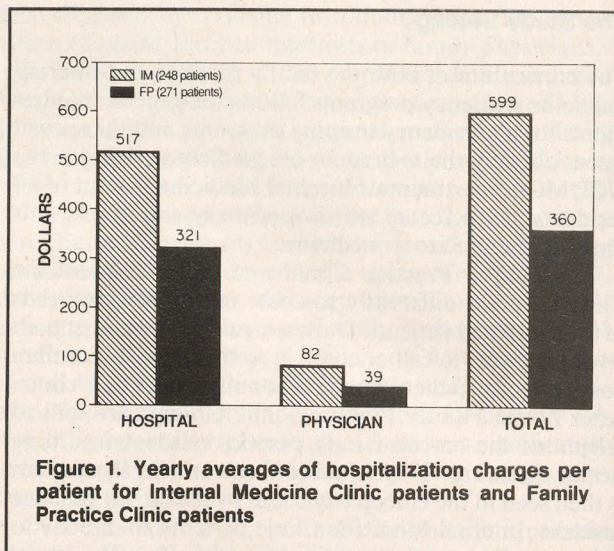


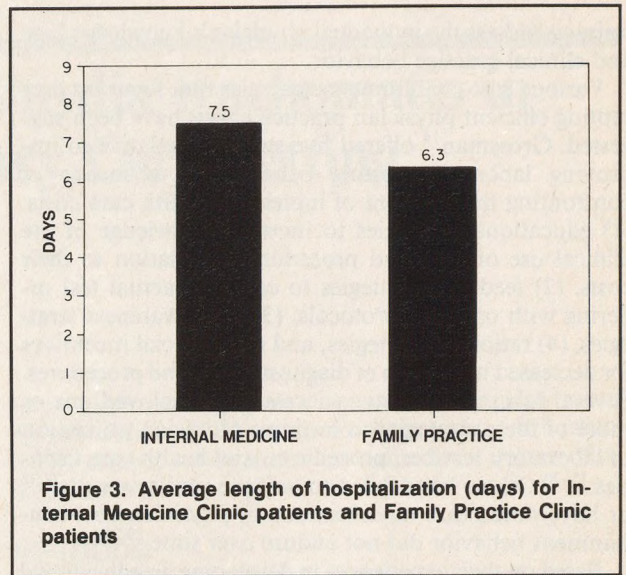
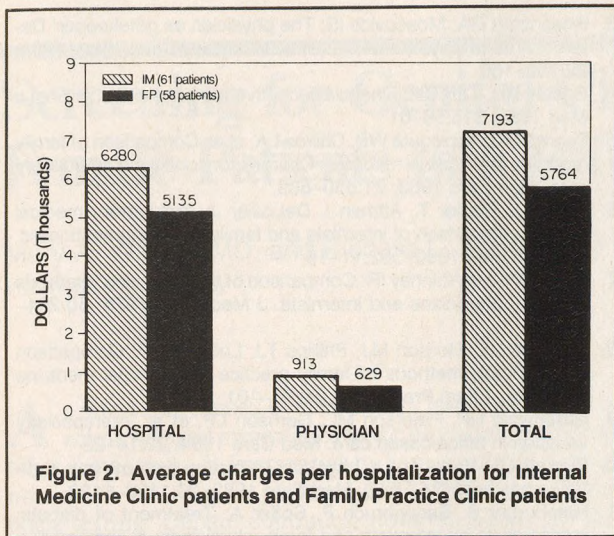
Figure 1. Yearly averages of hospitalization charges per patient for Internal Medicine Clinic patients and Family Practice Clinic patients

tients spent \$321 per patient per year on hospital charges and \$39 per patient per year on in-hospital physician charges.

Internal Medicine Clinic patients spent two thirds more per patient per year on hospital care than did Family Practice Clinic patients. This increased expenditure is a function of a number of factors. In addition to the greater number of hospitalizations for the Internal Medicine Clinic patients, each hospitalization was more expensive. The average total charge per hospitalization for Internal Medicine Clinic patients was \$7,193 compared with \$5,764 for Family Practice Clinic patients (Figure 2). This average total charge includes \$6,280 for hospital care and \$913 for physician charges during each hospitalization for Internal Medicine Clinic patients. For Family Practice Clinic patients, average hospital charges were \$5,135, and physician charges during each hospitalization were \$629. This 25 percent greater average total cost of hospitalization is consistent with the 19 percent longer length of stay for Internal Medicine Clinic patients compared with Family Practice Clinic patients. Internal Medicine Clinic patients' average length of hospital stay for each admission was 7.5 days as contrasted to 6.3 days for Family Practice Clinic patients, as displayed in Figure 3.

DISCUSSION

It is not known how many patients moved between clinics; however, the use of an intention-to-treat protocol means that patients once randomized to either clinic continued to be analyzed with the assigned group, even if they later chose another physician as their primary care provider.



Patients who crossed over would have tended to dilute the differences between groups, not exaggerate them.

It is important to emphasize that this study was not concerned with measuring quality of care or correlating quality to cost of care. Since there were no outcome criteria for quality of care, it is impossible to evaluate the effect that the practice styles of internists and family physicians had on patient care or to evaluate whether there were excess hospitalizations and expenses for one group as opposed to a deficiency for the other group. Nevertheless, a different practice pattern is evident.

Because of the skewed nature of the data, with 12 percent of the patients responsible for all of the hospital expenditures and the wide spread of charges within this group, it was not possible to demonstrate statistical significance. It was shown, however, that annualized hospitalization costs per patient for Internal Medicine Clinic patients were over 160 percent of those for Family Practice Clinic patients. These higher costs for Internal Medicine Clinic patients would also be consistent with the previous study, which found that patients followed by internal medicine physicians had significantly more frequent visits to their primary care clinic and to other consultant clinics in addition to greater laboratory costs (largely a result of the tests ordered by other referral physicians).¹³

It becomes apparent that while primary care providers do influence the charges for care that their patients generate, it is not the actual care that these providers deliver themselves which is of major importance with respect to charges. Rather, it is the care the patients receive from other specialists to whom they are referred by the primary care provider that eventually has a major influence on medical care costs. Most patients in this study were not

hospitalized directly from their primary care providers' clinics. Similarly, the majority of patients were also not hospitalized on the services of their primary care providers. The major practice characteristic of the primary providers that appears to influence hospital charges is not a function of what the primary care provider's services costs the patient, but rather what referrals these providers make.

Unfortunately, as current educational strategies are designed, no major emphasis appears to be placed on this obviously important gatekeeper role. In the study institution, neither specialty—family practice or internal medicine—has developed, as a formal part of their training curriculum, education in how to manage the care received by the provider's panel of patients but supplied by other physicians. The Family Practice Clinic has attempted to identify its patients hospitalized on other ward services to provide continuity and meaningful input on their care. These efforts may partially account for the lower length and cost of hospitalization for patients followed by the Family Practice Clinic.

The interspecialty differences reported previously by Greenwald and others⁹ emphasized the crucial role specialty training plays in the physician's clinical decisions. Both formal and informal training is the key distinction among the specialties and, according to their study, its impact is not overwhelmed by other physician characteristics. Even though alterations in practice organization, payment mechanisms, and other health care setting characteristics may adjust practice patterns, this process is slow and difficult to accomplish. Differences in the practice styles of various specialties are likely to remain until effective educational efforts during formal professional

training address the individual physician's knowledge base and clinical practice behavior.

Various cost-containment strategies that focus on promoting efficient physician practice habits have been suggested. Grossman¹⁴ offered five strategies relative to improving laboratory testing behavior as a means of confronting the problem of increasing health care costs: (1) educational strategies to increase knowledge of the clinical use of tests and procedures in relation to their costs, (2) feedback strategies to compare actual test ordering with ordering protocols, (3) cost-awareness strategies, (4) rationing strategies, and (5) financial incentives for decreased utilization of diagnostic tests and procedures. Several investigators have successfully employed one or more of these strategies to improve physician utilization of laboratory services, procedures, and health care facilities.¹⁵⁻²⁰ Others have failed to achieve similar results^{21,22} or have noted that modifications in physician cost-containment behavior did not endure over time.^{23,24}

Based on their experiences in developing an educational program for medical house staff and students to reduce unneeded orders for inpatient laboratory tests and nursing services, McPhee et al²⁵ made the following recommendations for others wishing to undertake similar educational cost-containment strategies: gaining the support of the hospital and attending staff; providing relevant patient-care-oriented educational materials that are mutually reinforcing and provide evidence for increasing the quality of care while decreasing excessive costs; and scheduling the timing and frequency of programs to meet physicians' needs.

On the basis of the findings in the present study regarding utilization of hospital services, and the previous one analyzing the utilization of ambulatory services, another essential recommendation should be added. If primary care physicians are to learn to be cost-effective gatekeepers to the health care system, they must learn when to make appropriate referrals to consultant physicians and to provide for continuity of care, both outpatient and inpatient, after that referral takes place. Judicious referral and continuity of care are particularly important in institutions where their admitting privileges are limited. Successful educational cost-containment strategies must recognize these important aspects of patient care.

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