Referral Patterns of Family Physicians and Surgeons in a Nonmetropolitan Area Of Illinois

Sue Morgan, Roland Folse, MD and Gabrielle D'Elia
Springfield, Illinois

Physicians in southern Illinois were surveyed to determine their referral patterns, rates, and types of problems requiring assistance. The survey involved 31 physicians in a 16-county area.

It appears that nonmetropolitan medical practices are somewhat self-contained. This reflects the traditional view of rural medicine as being more isolated than urban medicine. Most frequently referred problems for family physicians were cardiac, orthopedic, neurologic, and general surgical problems. Surgeons most frequently referred orthopedic, trauma, cancer, and cardiac problems.

Family physicians reported that seven percent of their new patients were referrals, and surgeons reported 46 percent. The outflow referral rate of 2.5 percent for family physicians and 1.8 percent for surgeons corresponds with the rates of physicians surveyed in previous studies. Practice arrangement, size of community, and the number of other medical resources available do not appear to be the key to establishing different referral rates. Of greater importance is the fact that referrals are made through the colleague network, and that training programs for students and residents and continuing education programs for practicing physicians should be designed with a view of current referral practices in rural areas.

The process for patient referral is an essential element of consideration in the evaluation of medical manpower needs for rural areas. The manner in which a physician resolves difficult problems, his use of community physician resources, and the relationship of referrals to practice arrangement and specialty are important factors which must be considered in planning for the delivery of health care services.

As a part of a major manpower study, Southern Illinois University School of Medicine studied family physicians and surgeons in southern Illinois to determine information on medical practice in rural areas and to use the information for designing educational programs which are responsive to the needs of the region. It was hypothesized that practice in a rural area differs from practice in an urban area. The referral processes of family physicians and surgeons, including types of problems referred and referral rates as well as physicians' attitudes about referrals, were among the questions considered, based on this reasoning. Differences between rural and urban practice indi-

From the Office of Health Systems Research and the Department of Surgery, Southern Illinois University, School of Medicine, Springfield, Illinois. Requests for reprints should be addressed to Ms. Sue Morgan, Office of Health Systems Research, Southern Illinois University, School of Medicine, PO Box 3926, Springfield, IL 62708.

0094-3509/79/030587-07$01.75

Table 1. Physician's Initial Choice for Handling Difficult Problems		
	Family Physicians N=19	General Surgeons N=11
Consult personal library	2.3	3.6
Consult medical/hospital library	1.7	1.5
Consult MD in own specialty	1.4	2.4
Consult MD in other specialty	4.1	2.9
Refer	3.0	2.6

cate that traditional medical school curricula should be altered to meet the unique and specific needs of rural practice in a medical school designed for that purpose.

Method

A multi-method approach was developed to gather data on referrals and consultations from physicians, their nurses, and their patient records in the study of office practices in nonmetropolitan areas.

Instruments

Four survey instruments were designed to study physicians' referral and consultation patterns: (1) a physician manpower survey, containing questions about referrals and consultations, which was completed by the physician; (2) a physician interview administered by researchers, containing questions about rural practice and recommendations for Southern Illinois University's education programs; (3) an office practice questionnaire, completed by the nurse-receptionist, estimating the number of patients seen, the number of new patients, and the percent of new patients who were referrals; and (4) an office practice survey form, a modification of a National Ambulatory Medical Care Survey form, which was used by researchers studying office patient records to gather data on patient status and disposition.

Sample

A proportional random sample stratified by specialty and type of practice of 34 general or family physicians and surgeons* was drawn from the pool of 98 family physicians and surgeons, under 65 years of age, in a 16-county contiguous area in central and southern Illinois. The entire 16-county area is nonmetropolitan, has no city with a population over 20,000, and includes a sizable rural population.

Twenty family physicians and 12 surgeons were included in the survey of physician office practices. Seven family physicians were board-certified and four were board-eligible. Eight surgeons were board-certified and one was board-eligible. Two of the general surgeons had a subspecialty in thoracic surgery. Of the family physicians, eight were in solo practice, ten in small group practices, and two in large, multi-specialty clinics. Six surgeons were in solo practice, two practiced in small groups, and four practiced in large, multi-specialty clinics.

The sampling procedure for selection of office records was taken from four specific weeks throughout the year to allow for seasonal variation, and included a count of the number of patients a physician saw in each of the four study weeks. The total number of patients was based on a tabulation of billing record information and patient appointment books.

Response

Thirty-four physicians or physician offices were involved in the study, but not all were involved in all aspects of the study. Thirty-three physicians were interviewed, and the office practice questionnaire was completed for 31 physicians. Office patient records were examined for 31 physicians, and 30 physicians completed the self-administered physician-manpower questionnaire. One physician who completed the questionnaire did not respond to all the questions concerning referrals.

*The term "family physicians" will be used throughout the paper to include responses from general and family physicians, and "surgeons" to include general and specialty surgeons.

Table 2. Choice for Handling Difficult Problems by Specialty and Type of Practice
Family Physicians (FP) N=19, General Surgeons (GS) N=11

Choice	Type of Practice: Solo FP	Solo GS	Small Group FP	Small Group GS	Multi-specialty Clinic FP	Multi-specialty Clinic GS
Consult personal library	2.63	4.66	2.20	1.00	1.00	3.33
Consult medical/hospital library	1.63	1.50	1.80	3.00	2.00	.33
Consult MD in own specialty	.38	2.00	2.10	2.00	3.00	3.33
Consult MD in other specialty	3.88	2.33	4.10	5.00	5.00	2.66
Refer	3.13	3.50	3.20	2.50	4.00	1.00

Results

Physicians' Choice for Handling Difficult Problems

The decision to refer is only one method a physician may choose to handle what he/she believes to be a difficult patient problem. Ninety-seven percent of the physicians studied prefer to use other means of solving difficult problems before referring to another physician.

Table 1 shows the physicians' ranking of methods of choice in resolving difficult problems. The choices were ranked with a value of 5 being given the first choice, 4, the second, and so on, and the mean responses were calculated.

As Table 1 indicates, the first response of family physicians would be to seek consultation from a physician in a specialty other than general or family practice. The responses for the surgeons were somewhat less clear-cut, although the first choice was to look to a personal library for handling difficult problems.

In an effort to determine whether the solo practice arrangement encouraged the physician to rely more on his own resources and, as a corollary, if physicians in groups have more resources available, the responses were separated by practice arrangement. The results are presented in Table 2.

Surgeons in small groups selected consultation with a physician in a different specialty from their own as first choice, while solo surgeons mentioned using their personal library first. Family physicians, regardless of practice type, selected a consultation with another specialty.

Geographic isolation from specialists had little effect on physicians' choice for resolving difficult problems. Those physicians who lived in communities without medical specialists or surgeons followed the same pattern as those who lived in communities with specialists and surgeons. The isolated physicians also chose consulting with a physician in another specialty and referring the patient as the methods most frequently used for handling difficult problems.

Types of Problems Requiring Assistance

The manpower questionnaire asked the physician to identify the types of problems he/she had referred and for which he/she had sought consultation. The term "referrals" denotes a permanent, temporary, or partial transfer of responsibility for care of the patient; "consultations" is used where responsibility remains with the referring physician, but advice or special studies are desired, and is therefore included in "referral" unless otherwise specified. Physicians were also asked to identify problems they "*always* referred." (Emphasis on "always" was included in the survey.)

A total of 32 types of problems (Table 3) was listed. Each physician gave from one to six responses for problems most frequently referred, one to six responses for consultations, and one to eight responses for problems always referred. Seventy percent of the surgeons and 47 percent of the family physicians specified that they seek assistance only for "complicated" problems in the areas mentioned.

Problems most frequently referred by family physicians were cardiac, orthopedic, and general surgical. Ophthalmologic and neurologic problems were also among the most commonly referred problems. Neurologic, neurosurgical, and cardiac problems led the list of problems *always* referred by family physicians. Surgeons most frequently

Table 3. Rank Ordering and Percentage Distribution for Which Referrals or Consultations Were Sought, by Physician Specialty

Type of Problem	Family Physicians Rank	Family Physicians Percentage	General Surgeons Rank	General Surgeons Percentage
Cardiac	1	13	3	9
Orthopedic	2	9	1	16
Neurologic		8	6	5
General Surgical	3	8	5	6
Ophthalmologic		8		1
Psychiatric	4	6	9	1
Dermatologic		5		1
Neurosurgical	5	5		4
Urologic		5	7	4
Pediatric		4		4
Otolaryngologic	6	4	8	2
Trauma	7	3	4	7
Obstetric-Gynecologic	8	3	9	1
Oncologic		2	2	10
Allergic	9	2	8	2
Internal Medicine		2	9	1
Thoracic Surgical		2	7	4
Hematologic	10	2		—
Colonic and Rectal Surgical		2		—
Vascular Surgical	11	1	4	7
Diagnostic		1		—
Radiologic		0.5	6	5
Respiratory		0.5		—
Pathologic	12	0.5		—
Endocrine		0.5		—
Dental		0.5		—
Podiatric		0.5		—
Chemotherapy		—	7	4
Chemotherapy-Pediatric		—	9	1
Plastic Surgical		—	8	2
Burns		—	9	1
Non-Medical	10	2		1
Total	178 responses		82 responses	

referred orthopedic, cancer, cardiac, and trauma problems, and while generally listing fewer problems, always referred more often than family physicians. Nearly 60 percent of the surgeons *always* referred neurologic, neurosurgical, and cardiac problems. Overall, more referrals and consultations were made for surgical problems than for medical, primary care, or other reasons.

Referral Locations

While it is a factor, distance alone does not appear to be an essential consideration in making referrals and consultations. Although all study physicians practice within 35 miles of at least one practicing specialist, a referral relationship did not necessarily exist. Physicians reported consulting with specialists as far away as Michigan and Texas using established communication channels. Sixty-nine percent of the study physicians, practicing in locations from 35 to 135 miles from St. Louis, reported referrals and consultations with specialists in St. Louis. Referrals to other major medical centers such as Springfield and Indianapolis came from physicians living as far as 160 miles from either. However, one third of the physicians referred patients to within their own community; and when referring problems outside their immediate area, they often referred to the closest major medical center. Based on questions

Table 4. Patient Status

Status	Family Physicians N=16 %		General Surgeons N=12 %
New Patient	5.5		17.0
Old Patient	93.5		71.0
Referral/Consultation	0.6		10.7
Unknown	0.4		2.0
Total (2,211 visits)	100.0	(1,522 visits)	100.0

answered in the interview, physicians feel that referrals are or should be made through established channels to specialists who are known to do good work, and who communicate the patient's progress to the referring physician. In making referrals and consultations, physicians also mentioned the problems their patients might have with travel time and road conditions.

Inflow and Outflow Referral Rates

The percentage of referrals made to a study physician (inflow) and the percentage of referrals made by a study physician (outflow) are each considered as part of the rate of referrals.

Consultation rates are also figured as the percentage made to a study physician and the percentage made by a study physician. However, in this study, both inflow and outflow consultations total less than one percent.

The inflow referral rate to the study physicians was calculated from nurse-receptionists' estimates given in the office practice questionnaire, and from the survey of patient records. The office practice questionnaire asked if the physicians accepted new patients and how many new patients were referred to them. Ninety percent of the physicians accepted new patients. Family physicians reported an average of 23 new patients per month, seven percent of whom were referrals. Surgeons reported an average of more than 30 new patients per month, 46 percent of whom were listed as referrals. The number of new and referral patients taken from the survey of patient records was slightly higher than the nurse-receptionists' estimates. Of 3,733 sampled records from 26 offices (28 physicians), 381, or ten percent, were new patients, and 177, or five percent, were referrals or consultations. Ninety-three percent of these referrals were to surgical specialists. The results of the survey of patient records separated by specialty are listed in Table 4. As shown in the table, surgeons see more new patients, more referrals, and more patients for consultation than family physicians.

The range of the percentage of inflow patient referrals to surgeons was between zero and 37 percent. The range for the family physicians was from zero to two percent. One surgeon and nine family physicians did not receive any referrals during the study period.

The physicians in this study had an overall outflow referral rate of two percent, with a range from .7 percent to 9.5 percent. Family physicians had a higher overall outflow referral rate than surgeons, as expected, but with the exception of surgeons in small groups, family physicians in solo practice had the lowest referral rate of any group. Table 5 lists referral rates of family physicians and surgeons, separated by type of practice: solo practice, small group practice, and large multispecialty clinic.

Only 12 (0.3 percent) of the 3,733 patient records surveyed gave any indication that a consultation was sought. Nine of these patients were from family physicians in small group practices. This lack of consultations as shown in the records does not necessarily mean that consultations were not sought. It is likely that consultations were sought but, due to incomplete recordkeeping, were not recorded in the patient's file.

Despite the low number of consultations sought as indicated by patient records, nearly 60 percent of the physicians stated in the interview they had need of a formal program for immediate telephone consultation. Cardiology, oncology, trauma, and internal medicine were the most frequently mentioned areas of need. Other areas included medical and surgical specialties. The most frequent reason given by physicians who did not see a need for a formal telephone consultation service was that

Table 5. Referral Rates by Specialty and Type of Practice Family Physicians (FP) N=16, General Surgeon (GS) N=12

	Total (%)	FP (%)	GS (%)
Solo	1.6	1.3	2.0
Small Group	2.7	3.2	0.7
Multi-Specialty Clinic	2.8	3.6	2.3
Total	2.3	2.5	1.8

many physicians already have an informal consultation service with specialists they know and have dealt with before. Also, the present national consultation system is too expensive, and many physicians expressed concern about cost. Finally, the difficulty in conveying the patient's situation by telephone was also considered a problem.

Comparisons with Selected Studies

Many of the published studies regarding referrals have been primarily concerned with family physicians and other primary care medical specialists. Metcalfe[1] studied referral patterns of four family physicians in New York State: two suburban, one small town, and one rural. He examined referral rates, types of problems referred, and the attitudes of the physicians toward their role in the referral process. Geyman[2] compared referrals made by eight family physicians representing solo and group practices in urban, suburban, and rural areas of California with referral practices reported by Metcalfe. Responses from physicians in these two studies differed somewhat from those in the southern Illinois study. Family physicians in southern Illinois most frequently sought assistance for cardiac, orthopedic, neurologic, and neurosurgical problems. The family physicians in the studies conducted by both Metcalfe and Geyman most frequently referred general surgical problems followed by obstetrics in Metcalfe's study and orthopedics in Geyman's study. Cardiac problems, the most frequently mentioned by southern Illinois physicians, were ranked 9th and 15th by the physicians in California and New York.

Johnson[3] looked at sources of referral of internists in New York State in terms of practice type and physician age. The percent of new patients a physician receives as referrals was also examined. The 32 to 51 percent range for the inflow referral rate of these internists compared with the 46 percent received by surgeons in southern Illinois. These figures also compare with the National Disease and Therapeutic Index,[4] with inflow referral rates of four percent for general practitioners and 44 percent for surgeons.

Penchansky[5] looked at the frequency of referral in primary care group practices. Referral rates were calculated based on specialty, type of practice, and various patient characteristics. In the National Ambulatory Medical Care Survey,[6] the referral rates were figured for general and family physicians based on a sampling of patient records.

Outflow referral rates were also calculated in studies conducted by Metcalfe, Geyman, Penchansky, and in the National Ambulatory Medical Care Survey. Table 6 is a comparison of these studies. As can be seen, referral rates are similar in each study in spite of the greater geographic distribution of the National Ambulatory Study as compared to the local studies.

Physicians in southern Illinois and those in Metcalfe's study expressed similar views on the importance of communication from specialists. According to the Study on Surgical Services for the United States, "the decision concerning to whom the referral is made depends principally on who the physician knows in different specialties, his perception of the competence and other characteristics of these physicians, and his past experience in referring patients to various specialists."[7]

Discussion

Data presented in this report will be used to assist the Southern Illinois University School of Medicine in planning the subject areas of medical education programs for physicians who plan to practice in rural areas as well as for continuing education for those who are currently in practice.

Physicians apparently prefer to refer to or consult with physicians they know, or to handle the prob-

lems themselves by consulting their personal library. When asked their choice for handling difficult problems, the majority, 61 percent of physicians, stated they would seek assistance from another physician. However, based on the survey of patient records in actual practice, physicians tended to be more self-reliant, as indicated by the average referral rate of only slightly more than two percent. For example, family physicians in solo practice stated they would consult with another physician or refer difficult problems, but actual referrals and consultations totaled only slightly more than one percent. Surgeons in small groups also stated they would refer or seek consultations, but their records showed referral and consultation rates totaling less than one percent.

These results could be due to a paucity of difficult problems being seen; to the possibility that physicians are not identifying difficult problems; or to their failure to record referrals or consultations in the patients' records. However, referral rates among family physicians in this study are similar to other nonurban family practice studies.

It appears that nonmetropolitan medical practices are somewhat self-contained. This reflects the traditional view of rural medicine as more isolated than urban. The physicians in southern Illinois provide a broad range of services, perhaps a greater range than in other places where family physicians refer more frequently. Family physicians in other areas are referring more for general surgery, while these study physicians referred for more specific reasons, ie, cardiac, orthopedic, ophthalmologic, and neurologic.

Practice arrangement, size of community, and the number of other medical resources available do not appear to be the key to establishing different referral rates. Of greater importance is the fact that referrals are made through the colleague network.

What are the implications of these findings for a community-based medical school with a mandate to serve a nonmetropolitan area? First, training programs for students and residents and continuing education programs for practicing physicians need to be designed in view of current referral practices in rural areas. Problem identification and management require broad training to set the boundaries for referral. If physicians in rural areas are referring less and seeking fewer consultations than urban physicians and intend to continue this pattern, perhaps the School of Medicine should provide more primary care training for surgeons and more surgical experience for family physicians. In addition to the development of educational programs, the School of Medicine should develop a communication network to expand community physicians' acquaintances in specialty areas. Implementation of these recommendations in medical school programs should have a positive impact on the quality of patient care in nonmetropolitan areas.

Table 6. Comparisons of Average Referral Rates in Selected Studies

	% Referral Rate by Specialty	
	FP	GS
Southern Illinois*	2.5	1.8
Metcalfe*	2.3	—
Geyman*	1.8	—
Penchansky*	4.2	—
National Ambulatory Medical Care Survey	2.7	—

*Physicians from nonurban areas only

Acknowledgements

This research was financed by a grant from the Illinois Regional Medical Program, OC-66, June 1975 through June 1976.

References

1. Metcalfe DH, Sischy D: Patterns of referral from family practice. J Fam Pract 1(2):34, 1974
2. Geyman JP, Brown TC, Rivers K: Referrals in family practice: A comparative study by geographic region and practice setting. J Fam Pract 3:163, 1976
3. Johnson AC, Kroeger HH, Altman I, et al: The office practice of internists: Part 3: Characteristics of patients. JAMA 193:144, 1965
4. National Disease and Therapeutic Index. Ambler, Pa, Lea Associates Inc, 1961, p 340
5. Penchansky R, Fox D: Frequency of referral and patient characteristics in group practice. Med Care 8:368, 1970
6. National ambulatory medical care survey: Background and methodology, United States. In National Center for Health Statistics (Rockville, Md): Vital and Health Statistics, series 2, No. 61. DHEW publication No. (HRA) 74-1335. Government Printing Office, 1974
7. American College of Surgeons and American Surgical Association: A Summary Report of the Study on Surgical Services for the United States. Baltimore, American College of Surgeons and American Surgical Association, 1975, pp 104-105