

# A Statewide University Hospital-Based Family Medicine Referral Service

Stephen J. Spann, MD, Alan J. Maxwell, MD, and William D. Grant, EdD  
*Oklahoma City, Oklahoma, Tuscaloosa, Alabama and Oklahoma City, Oklahoma*

*A statewide university hospital-based family medicine referral service was established at the University of Oklahoma in July 1983. During the first six months of operation, 14 percent of all patients admitted to the family medicine inpatient service were referred by outside physicians. Referral patients had more diagnoses coded per admission (2.25) than continuity patients (1.56) ( $P < .05$ ). In referral patients, 23.3 percent of diagnoses fell into the 52 most common diagnostic cluster described by Rosenblatt et al compared with 50.9 percent in continuity patients ( $P < .0005$ ). Specialty consultations, invasive diagnostic procedures, surgical procedures, and average length of hospital stay were compared in the subgroup of patients with medical, pediatric, surgical, and gynecological principal diagnoses. Referred patients averaged 0.974 consultations per admission compared with 0.578 in continuity patients ( $P < .01$ ). An average of 1.237 invasive diagnostic procedures per admission were performed in referral patients compared with 0.626 in continuity patients ( $P < .0005$ ). Referral patients averaged 0.145 surgical procedures per admission compared with 0.123 in continuity patients (not significant). The average length of stay for both continuity and referral patients was 9.68 days per admission. A survey of the referring physicians indicated that both the physicians and the patients whom they referred were generally satisfied with the care provided by the service.*

Despite the comprehensive nature of their practice, family physicians refer from 1.5 to 5.4 percent of the patients they see for specialized care.<sup>1-4</sup> In their classic study of community illness and health care patterns, White et al<sup>5</sup> found that of 1,000 adult patients aged over 16 years, 250 consult a physician in a given month; of these, 5 (2 percent) are referred to another physician and 1 (0.4 percent) to a university medical

center. Thus, a family physician averaging 500 patient visits per month would refer an average of two patients to a university medical center during that period of time.

Feedback communication from the specialist to the referring primary physician is essential for maintaining continuity of care. University hospital specialty teaching clinics have been shown to provide less frequent feedback communication to the referring primary physician (only 43 to 59 percent of the time) when compared with community or university-based private practice specialists.<sup>6-8</sup> When a family physician refers a patient to a university medical center for care, he or she generally gives up, at least temporarily, the ability to coordinate the patient's care in that setting. Additionally, the family physician is often limited in his

*Submitted, revised, May 7, 1985.*

*From the Department of Family Medicine, Oklahoma University Health Sciences Center, Oklahoma City, Oklahoma. Requests for reprints should be addressed to Dr. Stephen J. Spann, University of Oklahoma Health Sciences Center, Department of Family Medicine, P.O. Box 26901, Oklahoma City, OK 73190.*



ability to contribute valuable data from a wealth of knowledge, often accumulated over years, regarding the patient's past medical history, family medical history, social situation, and family constellation. The patient and family, accustomed to comprehensive and coordinated care by one physician, may suddenly be faced with many specialists in a fragmented system of care.

Because of these potential difficulties for both the primary care physician and the patient in the process of referral to a university medical center, the Department of Family Medicine of the University of Oklahoma established a formal statewide referral service in July of 1983. The purpose of this service is threefold:

1. To facilitate patient referrals to the university hospital and clinics by family physicians within the state of Oklahoma

2. To provide a communication link between the primary care physician and university-based specialists involved in the care of the patient, ensuring continuing input of the primary physician into the patient's care and adequate feedback to that physician

3. To provide a family physician substitute for the patient in the university hospital setting to serve as coordinator of care and primary communication link with the patient and family

This paper describes the implementation of the service, and the numbers and diagnoses of patients admitted during the first six months of operation. Specialty consultations, invasive diagnostic procedures, surgical procedures, and average length of hospital stay are compared in the subset of patients with medical, pediatric, surgical, and gynecological principal diagnoses. The satisfaction of the referring physicians utilizing the service is described.

## **METHODS**

A letter describing the family medicine referral service was sent to all members of the Oklahoma Academy of Family Physicians in late June 1983. The letter emphasized, in general terms, the purposes of the service and the logistics of making a referral. One month later a more detailed letter was sent; a separate reminder card containing a 24-hour telephone number for referral calls was enclosed.

Any physician in the state of Oklahoma can refer a patient to this service at any time of the day or night on any day of the year. The referring physician is immediately put in touch with the attending family physician faculty on call; a joint decision is then made regarding the disposition of the patient. Patients may be evaluated initially in the Family Medicine Clinic or the hospital emergency room. If the need for hospitalization is obvious, plans are made for direct admis-

sion of the patient.

Attending family physician faculty have full admitting privileges to the university hospital, including obstetrics, newborn nursery, and medical and coronary intensive care units. Patients requiring hospitalization are admitted to the family medicine inpatient service, under the care of family medicine residents, supervised by attending family physician faculty. Each patient is evaluated, and subspecialty consultations are obtained, if required. These patients remain on the family medicine service during their hospitalization unless they require surgery, in which case they are transferred to the surgical service postoperatively but are still followed daily by the family medicine team.

The primary family physician is contacted by telephone by the attending faculty physician shortly after the patient's initial evaluation. Diagnostic and therapeutic plans are discussed with input being solicited from the referring physician, who is further contacted for input at critical decision points during the patient's hospitalization. The referring physician is again contacted on the day the patient is discharged for an update on the outcome of the hospitalization and follow-up plans for the patient. The attending faculty then sends a letter and a discharge summary of the patient's hospital stay to the referring physician.

As part of an ongoing patient data collection system, age, sex, dates of admission and discharge, discharge diagnoses, specialty consultations, and invasive diagnostic and therapeutic procedures performed are recorded for all patients admitted to the family medicine inpatient service. This study examines patient data recorded during the first six months of operation of the referral service, from July 1 to December 31, 1983. Patients were designated as continuity patients if they received their ongoing medical care from the Family Medicine Clinic, or referral patients if they were referred by a physician practicing outside the Department of Family Medicine.

Numbers of patients admitted, types of patient problems, and discharge diagnoses were compared between referral and continuity patients. Numbers of specialty consultations, numbers of invasive diagnostic procedures, numbers of surgical procedures, and lengths of hospital stay in days were compared between the referral and continuity populations in the subset of patients with medical, pediatric, surgical, and gynecological principal diagnoses. The numbers of referral patients with obstetrical, newborn, and rehabilitative principal problems were small; therefore, all patients with these diagnoses were excluded from this analysis. The chi-square statistic was used in these comparisons.

At the end of the six-month period, all physicians who had referred patients to the service were asked to complete a short user's survey questionnaire to rate the effectiveness and utility of the referral service.



**TABLE 1. MONTHLY INPATIENT SERVICE ADMISSIONS, JULY-DECEMBER 1983: CONTINUITY VS REFERRAL PATIENTS**

Month	Continuity No. (%)	Referral No. (%)	Total
July	90 (94.7)	5 (5.3)	95
August	68 (76)	21 (24)	89
September	99 (88)	13 (12)	112
October	74 (87)	11 (13)	85
November	79 (84)	15 (16)	94
December	64 (81)	15 (19)	79
Six-month total	474 (86)	80 (14)	554

**TABLE 2. ADMISSIONS BY PRINCIPAL DIAGNOSES, JULY-DECEMBER, 1983: CONTINUITY VS REFERRAL PATIENTS**

Admission Type	Continuity No. (%)	Referral No. (%)
Obstetrical	122 (25.7)	1 (1.2)
Newborn	164 (34.6)	3 (3.8)
Medical	143 (30.2)	47 (58.8)
Pediatric	12 (2.5)	7 (8.8)
Surgical	27 (5.7)	20 (25.0)
Rehabilitative	1 (0.2)	0
Gynecological	5 (1.0)	2 (2.5)
Total	474 (100)	80 (100)

## RESULTS

Of 554 patients admitted to the family medicine inpatient service from July 1 to December 31, 1983, 80 (14 percent) were referred by physicians from outside the department. Thirty-two different physicians referred patients to the service during this time. Table 1 displays the number and percentage of continuity and referral patients admitted monthly during the study period. Admissions were classified as obstetrical, newborn, medical, pediatric, surgical, gynecological, or rehabilitative according to the type of principal problem presented by the patient. Table 2 displays types of admissions for continuity and referral patients during the study period.

One hundred eighty discharge diagnoses were coded for the referral patients (2.25 diagnoses per admission) compared with 738 diagnoses coded for the 474 continuity patients (1.56 diagnoses per admission) ( $P < .05$ ). Diagnoses were classified according to inpatient diagnostic clusters as described by Rosenblatt et al.<sup>9</sup> Of diagnoses in the referral population, 23.3 percent, compared with 50.9 percent of diagnoses in the continuity population, fell into the 52 described diag-

nostic clusters ( $P < .01$ ). In referral patients, 7.2 percent of diagnoses fell within the top 15 clusters described by Rosenblatt et al compared with 41.9 percent in the continuity patients ( $P < .0005$ ).

Seventy-six referral patients and 187 continuity patients fell within the subset with medical, pediatric, surgical, and gynecological principal diagnoses. Seventy-four specialty consultations (0.974 consultations per admission) were obtained in referral patients compared with 108 specialty consultations (0.578 consultations per admission) in continuity patients in this subset ( $P < .01$ ) (Table 3). Ninety-four invasive diagnostic procedures (1.237 procedures per admission) were performed in referral patients compared with 117 invasive diagnostic procedures (0.626 procedures per admission) in continuity patients in this subset ( $P < .005$ ) (Table 3). Eleven surgical procedures (0.145 procedures per admission) were performed in referral patients compared with 23 surgical procedures (0.145 procedures per admission) in continuity patients in this subgroup (not significant) (Table 3). The average length of stay for both continuity and referral patients in this subgroup was 9.68 days (Table 3).

Thirty-two user survey forms were mailed to physi-



**TABLE 3. SPECIALTY CONSULTATIONS, INVASIVE DIAGNOSTIC PROCEDURES, SURGICAL PROCEDURES, AND LENGTH OF HOSPITAL STAY IN DAYS: CONTINUITY VS REFERRAL PATIENTS WITH MEDICAL, SURGICAL, PEDIATRIC, AND GYNECOLOGICAL PRINCIPAL DIAGNOSES**

	Admissions		P Value
	Continuity (n=187) No./admission	Referral (n=76) No./admission	
Specialty consultations	108 (.578)	74 (.974)	P < .01
Invasive diagnostic procedures	117 (.626)	94 (.237)	P < .0005
Surgical procedures	23 (.123)	11 (.145)	NS
Length of hospital stay in days (average)	1810 (.968)	736 (.968)	NS

cians who had referred patients during the study period. Twenty-six complete forms were returned, for a usable response rate of 81.5 percent. Table 4 displays mean and range of ratings for five ratable questions on the survey. Twenty-five of 26 respondents indicated that they would use the referral service again. Three respondents recommended improvement in the communication with the primary physician during the patient's hospital stay. One respondent recommended that the referring physician be told if a bed were not immediately available for the patient being referred. One respondent suggested that a copy of the admission history and physical be sent along with the discharge summary to the referring physician.

## DISCUSSION

Patients admitted to a family medicine inpatient service constitute a significant clinical teaching resource as well as source of patient care income for both the family medicine and specialty services. The national trends of decreasing numbers of hospital inpatient days and increasing numbers of private, community-based, tertiary care subspecialists translate into decreasing numbers of admissions to university teaching hospitals. The data obtained in this study demonstrate that a well-organized, statewide, university hospital-based family medicine referral service can capture a significant number of patient referrals and increase the inpatient teaching population. In addition to increasing the total number of admissions, referral patients bring a broad and interesting spectrum of medical problems. Rosenblatt et al<sup>9</sup> found that 78 percent of all principal diagnoses recorded in hospital by family physicians were included in 52 clinically discrete diagnosis clusters; 50 percent of hospital encounters could be incor-

porated in only 15 of these clusters. That all diagnoses coded, not just principal diagnoses, were analyzed may explain why only 50.9 percent of diagnoses in the continuity population fell within the 52 inpatient diagnosis clusters described by Rosenblatt et al. The 23.3 percent of referral patients' diagnoses that fell within these clusters appears consistent with the nature of the patient population itself—a tertiary care population.

When family physicians receive referrals to a tertiary care university hospital, they function as family physician substitutes and coordinators of care for referred patients in a tertiary care, not a primary care, role. Consequently, many of the particular features of family practice that affect the ways in which family physicians solve clinical problems, which have been so well described by McWhinney,<sup>10</sup> are not present. White et al<sup>5</sup> have shown that only 0.4 percent of adults presenting to a primary care physician are ultimately referred to the university medical center; clearly the pattern of illness in a referral patient population is not that of the community-based population. Patients referred to the tertiary care center have been previously evaluated by other physicians and are generally referred in later stages of disease. Physicians caring for referred patients in tertiary care centers do not enjoy the benefits of a continuous relationship with these patients over time: they often lack significant parts of the patients' past medical histories and generally cannot depend upon continuing relationships over time as diagnostic and therapeutic allies.

Because of the clinical differences between the continuity and referral patient populations, and because the differences between primary and tertiary care lead to different problem-solving strategies, it was hypothesized that the process of care would be different when these two populations were compared. In the subset of patients with medical, pediatric, surgical, and gynecological principal diagnoses, referral patients re-



TABLE 4. RESULTS OF USER SURVEY (N= 26)

Item	Mean Rating*	Range of Ratings
1. Quick and courteous response	1.3	1-3
2. Kept abreast of important developments about patient	1.7	1-3
3. Appropriately consulted during delivery of care	1.6	1-3
4. Received discharge summary	1.7	1-5
5. Patients satisfied with care	1.5	1-5

\*Ratings range from 1 = all the time, to 5 = never

ceived more consultations and underwent more invasive diagnostic procedures than continuity patients. Numbers of invasive therapeutic (surgical) procedures and hospital lengths of stay in days were not significantly different in the two populations.

The attending family physicians involved in the care of these patients have subjectively felt that family physician clinical care-giving and problem-solving behaviors—the process of care—differs for the two patient populations. Data presented here would appear to support this subjective assessment. Whether these differences in behavior are solely related to the complexity of problems and severity of illness or are also related to the degree of continuity and longitudinality in the physician-patient relationships over time cannot be ascertained. Referral patients had more diagnoses per admission, suggesting greater severity of illness, and more uncommon diagnoses, and thus more complex illness than continuity patients. To assess the contribution of continuity and longitudinality of the physician-patient relationship to the differences in the process of care would require stratification of the two populations by diagnosis for comparison. Small sample size, however, precludes such analysis of the current data.

In the increasingly competitive market for tertiary care referrals, ease of referral and adequacy of feedback communication to the primary physician are important for successful competition. The data from the referring physician survey suggest that a university hospital-based family medicine referral service can succeed in these areas. Having a family physician substitute who can serve as coordinator of care and guide the patient through the tertiary care maze, as well as provide the primary communication link with the patient and family, should increase patient comfort and satisfaction in the university hospital setting. The data indicate that the referral patients were satisfied with the care they received.

## CONCLUSIONS

A successful, statewide, university hospital-based family medicine referral service was established. This service contributes a significant number of admissions to the inpatient service. Referral patients appear to have more complex illnesses than continuity patients. The process of care provided by family physicians appears to be different in the two patient populations. Other specialty teaching services benefit from these referrals. Referring physicians and referred patients appear to be satisfied with the referral service.

## References

- Geyman JP, Brown TC, Rivers K: Referrals in family practice: A comparative study by geographic region and practice setting. *J Fam Pract* 1976; 3:163-167
- Brock C: Consultation and referral patterns of family physicians. *J Fam Pract* 1977; 4:1129-1134
- Moscovice I, Schwartz CW, Shortell SM: Referral patterns of family physicians in an underserved rural area. *J Fam Pract* 1979; 9:677-682
- Ruane TJ: Consultation and referral in a Vermont family practice: A study of utilization, specialty distribution, and outcome. *J Fam Pract* 1979; 8:1037-1040
- White KL, Williams TF, Greenberg BC: The ecology of medical care. *N Engl J Med* 1961; 265:885
- Cummings RO, Smith RW, Inui TS: Communication failure in primary care, failure of consultants to provide follow-up information. *JAMA* 1980; 243:1650-1652
- Curry RW Jr, Crandall LA, Coggins WJ: The referral process: A study of one method for improving communication between rural practitioners and consultants. *J Fam Pract* 1980; 10:287-291
- Hansen JP, Brown SE, Sullivan RJ Jr, Muhlbaier LH: Factors related to an effective referral and consultation process. *J Fam Pract* 1982; 15:651-656
- Rosenblatt RA, Schneeweiss R, Cherkin DC, Hart GL: Inpatient diagnosis clusters: Analyzing hospital care in family practice. *J Fam Pract* 1984; 18:93-101
- McWhinney IR: Problem-solving and decision-making in family practice. *Can Fam Physician* 1979; 25:1473-1477