

Nurse Practitioner Referral Patterns In Primary Care/Occupational Health Care Settings

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Abstract

Referral patterns of nurse practitioners (NP) in primary and occupational health care settings are of significant interest to administrators and managed care organizations. High referral patterns are inefficient and increase costs to the patient, the health care organization as well as the managed care organization.

This project describes NP referral patterns in two primary care nurse managed clinics located in Houston, Texas and Memphis, Tennessee. Reasons given for referral included lack of knowledge for the problem (17%), lack of skills to handle the problem (20%), outside NP scope of practice (18%), lack of clinic resources (40%) and other (5%). The types of specialists to whom NPs referred their patients included orthopedists (10%), dermatologists (9%), gynecologists (9%), otolaryngologists (7%) and other specialists on a less frequent basis. Total percentage of patients referred as well as types of diagnostic procedures requested by the NPs are also described. Finally, implications of this project for NP education (formal and informal) nurse administrators and managed care companies are discussed.

INTRODUCTION

As health care reform progresses, nurse practitioners (NP) are increasingly scrutinized for the care they deliver. This scrutiny comes from both the medical community and from insurance and managed care organizations interested in quality and quantity of services delivered to their customers. To date, however, these same insurance companies and managed care organizations have, in reality, done very little to monitor the quality and quantity of care delivered by physicians much less NPs. However, with greater emphasis on the provision of primary care by NPs these same companies will monitor the efficiency and effectiveness of NPs. Utilization of resources through referrals by NPs may be targeted as a means for cost savings compared to referral rates of physicians. Since referral patterns are one aspect of cost effectiveness of a provider, it then becomes important to measure these patterns in order to measure economic outcomes of care.

Is it really more cost effective for NPs to treat a cohort of

patients if referral and diagnostic patterns are greater than a physician? If not, then it makes little economic sense for these companies to reimburse the NP as a primary care provider (PCP) at the same rate as physicians.

LITERATURE REVIEW

Several studies have documented the cost effectiveness and quality of care delivered by NPs. The Office of Technology Assessment (1), the American Nurses' Association meta-analysis (2), other studies (3,4,5,6) have shown that NPs provide equal to or better care than that delivered by physicians practicing alone. However, there are little data regarding referral patterns of NPs. Nurse practitioner services are consistently obscured by data collection methods that focus on the collaborating physician. NP productivity, prescriptive practice, and revenue generation are recorded under a physician's name and provider number, both at the insurance level and the pharmacy level (7). Nevertheless, some studies have frivolously attempted to define what NPs do and how they do it.

Record and Schweitzer (8) reported that NPs can manage 80% of adult and 90% of pediatric primary care currently delivered by physicians. A most recent study by Nurse Practitioners Education Associates (7) surveyed 776 NPs from across the United States regarding their practices. Results in this study showed that 17% of the nurse practitioners studied did not consult with a physician on any patient, 47% consult on 10-20% of patient encounters, 25% consult on 5-10%, and 11% consult on less than 5% of all encounters. In this particular sample 70% were practicing in an ambulatory setting and 78.7% were either family or adult nurse practitioners. Though this study seems to be a retrospective study based on NP estimations of referral patterns it provides insight into these referral/consultation patterns.

Hooker and McCaig (9) looked at the extent to which physician assistants and/or NPs were a source of health care delivery in emergency departments in the United States. They indicated that physician assistants and NPs are involved in care for almost 4% of all emergency visits nationally and manage a wider range of conditions than has been previously reported. To their dismay, they were unable to locate any study that identified the range of emergency services that could be provided by NPs.

PROJECT PURPOSE

The purpose of this study was to describe NP referral patterns in two primary care practices which also provide occupational health care. Specifically, this study was intended to discover reasons why NPs refer patients; the types of specialists to whom they most frequently refer; the types of diagnostic procedures requested; and the percentage of patients referred to specialists.

SETTING

This study was conducted at two academic nurse practitioner managed clinics in large metropolitan areas. Both clinics are directed by doctorally prepared NPs who are professors of clinical nursing in their respective schools.

UNIVERSITY OF TENNESSEE-MEMPHIS

University Health Services (UHS) is a primary care clinic in the center of the University of Tennessee, Memphis campus. The clinic provides services to students at on campus (82% of the clinic's patients), as well as University employees (16% of the clinic's patients), neighboring colleges and schools, and the general community (2% of the clinic's patients). A general range of primary care services are

provided with the top five most requested reasons for contact being: gynecological exams, healthy male exams, family planning, upper respiratory tract infections, and sinusitis.

Along with the clinic director, UHS is staffed by one full-time and two part-time NPs and a .25 full-time equivalent (FTE) family practice physician. A senior phlebotomist, a data entry clerk, an administrative services assistant and an occupational health coordinator complete the staff of the clinic. Last year UHS had 1,814 patient encounters. Nineteen percent (19%) of the encounters were seen by the physician and 81% by the NPs.

UHS is located in the center of campus in a building housing a dormitory and administrative offices. The clinic occupies one floor with 8 examining and consultation rooms, a lab, a large waiting room with a self-care area, a conference room, and 5 offices.

UNIVERSITY OF TEXAS HEALTH SERVICES

Since February, 1991, The University of Texas Houston Health Services (UTHS) has provided primary health care services to The University of Texas Houston Health Science Center students and employees as well as private patients and corporations throughout the greater Houston community. Students and employees make up 50% of patients served and private patients the other 50%. Private patients access UTHS via contracts and agreements for service with community businesses, fee for service, and managed care contracts. Many of these private patients are employed by companies which contract with UTHS to deliver occupational health care. UTHS currently has some 24 contracts/service agreements with outside organizations. Last year UTHS had over 14,500 patient encounters for the usual problems encountered in a primary care setting. (10).

The UTHS is staffed by a full-time family nurse practitioner director along with an additional 2 full-time family nurse practitioners. Physician back-up for the NPs is contracted through the School of Public Health. The physician visits the clinic two half days per week (.20 FTE) and is board certified as a pulmonologist, internist and occupational health specialist. He also manages a caseload of his own patients which accounted for 4% of all patients seen at the clinic in fiscal year 1996. The NPs provided care to the other 96% of the patients. The UTHS is located in The University's administration building on the edge of campus. The 4,000 sq. ft. clinic has a large waiting room, receptionist area, and 10 examination/treatment rooms.

PROCEDURE

Data for this study were simultaneously collected in the two sites during the months of January through March, 1997. All patients who received referrals by NP's during these months were counted in this quality assessment project. A form was developed by the two sites after an initial discussion of content and a subsequent pilot study (Figure A).

Figure 1

Figure A: Patient Referral Data Collection

UNIVERSITY HEALTH SERVICES
UNIVERSITY OF TENNESSEE, MEMPHIS
AND
UNIVERSITY OF TEXAS HEALTH SERVICES

DIAGNOSIS (ICD 9#) _____
Reason for Referral/Consultation: (check all that apply)
1. Lack of NP knowledge for this problem
2. Lack of NP skills for this problem
3. Out of NP scope of practice
4. Lack of clinic resources for this problem
5. Other (describe) _____
Specialist care: (check all that apply)
6. Allergy 12. MD in clinic
7. ENT 13. Neuro
8. Endocrine 14. OB
9. Derm 15. Orthopedics
10. GI 16. Opthamology
11. GYN 17. Other (describe) _____
X-rays: (check all that apply)
18. Chest X-ray
19. Extremity X-ray
20. Back/Spine X-ray
21. Other X-ray (give type) _____
Counseling: (check all that apply)
22. Mental Health
23. Fitness
24. Nutrition
25. Other (describe) _____
Hospital Referrals:
26. Admission
27. Emergency Room
Diagnostic Procedures: (check all that apply)
28. MRI 29. CT Scan
30. CV studies 31. Mammogram
32. Ultrasound 33. Colposcopy
34. Endoscopy 35. Biopsy
36. Nuclear Medicine
37. Other (describe) _____

The NP completed the form at the time of visit for every patient who was referred to an internal (i.e. in-house physician support) or external provider (i.e. physician specialist, counseling) or service (i.e. radiology or imaging services, physical therapy). Dental referrals were not captured as part of this study. The NP initiated the form only if a patient was referred. On the form she/he indicated the diagnosis, the reason for referral/consultation, the specialist to whom he/she was referring, type of x-ray, counseling or diagnostic procedure requested, and/or if a hospital referral were being made. The form was best completed by the NP rather than a central person because complete information could not always be determined from reading the chart. Forms were collected by one NP contact in each clinic and forwarded to the research statistician at the end of each month.

The development of the form created an interesting debate among the NPs at the two sites. The reason for referral is often a judgment call on the part of the NP and it also reflects the standards of care as well as the resources of each clinic. In this case, clinic resources and protocols were only somewhat different for each site. Consequently, it was felt that clinic resources and protocols did not significantly affect differences in referral patterns.

RESULTS

Over the three month period the two sites had 2,946 total encounters and a total of 190 referrals were made by the NPs in the two sites for a referral rate of 6.45%. UTHS referred 126 of the 2,039 patients (6.17% referral rate) seen in clinic for 84 different types of conditions. UHS referred 63 of 907 patients (7.05% referral rate) seen in clinic for 45 different types of conditions (Table 1). Patients for whom referrals were made were diagnosed by the NPs with a variety of conditions involving most of the major body systems. Because patient diagnoses were diverse, they were tabulated according to the International Classification of Diseases ninth revision (ICD9). This classification includes 17 major categories of diagnoses and the supplemental classification of factors influencing health status and contact with health services or V codes. Specific diagnoses codes grouped according to the 17 categories are shown in Table 1. The diagnostic category with the highest frequency at UTHS was Injury and Poisoning and included diagnoses of fractures (n=3), torn cartilage (n=1), sprains and strains (n=7), scalp laceration (n=1) and contusions (n=4). At UHS the most frequent category was Symptoms, Signs, and Ill-define Conditions. This category includes diagnoses of insomnia (n=1), rash (n=1), weight gain (n=1), headache (n=3), palpitations (n=1), cough (n=1), chest pain (n=1), abdominal pain (n=5), abnormal chest film (n=1), and abnormal pap smear (n=2).

Figure 2

Table 1: WORKING DIAGNOSIS FOR REFERRED PATIENTS (N=173)

ICD-9 Category	UTHS	UHS
Infectious and Parasitic Diseases	1	1
Neoplasms	12	2
Endocrine and Nutritional and Metabolic Diseases, and Immunity Disorders	1	2
Diseases of the Blood and Blood-forming Organs	1	0
Mental Disorders	5	2
Diseases of the Nervous System and Sense Organs	13	4
Diseases of the Circulatory System	9	4
Diseases of the Respiratory System	6	6
Diseases of the Digestive System	5	4
Diseases of the Genitourinary System	9	7
Diseases of the Skin and Subcutaneous Tissue	8	1
Diseases of the Musculoskeletal System, Connective Tissue	13	7
Symptoms, Signs, and Ill-defined Conditions	11	17
Injury and Poisoning	16	6
TOTAL	110	63

Within the remaining 16 categories, three or more patients were referred with diagnoses of the following conditions at UTHS: nevi skin lesions (n=3), tympanic membrane rupture (n=4), knee pain (n=4), tendinitis (n=4), and PPD converters (n=5). At UHS three or more patients were referred for bronchitis (n=3), pelvic pain (n=4), and sprain (n=4). The diagnoses in the V code categories for UTHS were all in the category of Persons without reported diagnosis encountered during examination and investigation of individuals and populations and included general physical examinations (n=3), pre-employment physical examinations (n=3), gynecological examinations with pap smear (n=6), and mammogram (n=2). The diagnosis in the V code category for UTS were in the category of Persons encountering health services in circumstances related to reproduction and development with one person being seen for family planning.

When making a referral the NPs were also asked to indicate the reason for making that referral (Table 2). In some circumstances there was more than one reason for referring and they were encouraged to indicate this by marking one or more of the predetermined reasons. For the 126 referrals at UTHS, a total of 179 reasons were selected and for the 64 referrals at UHS 88 reasons were selected. The number of times each reason was selected by UTHS and UHS are shown in Table 2. The overwhelming reason selected for referral was lack of clinic resources. An example of this reason for referral would be a patient referred out for a diagnostic procedure such as x-rays, mammograms, MRIs or ultrasound examinations (Table 4).

Figure 4

Table 4: DIAGNOSTIC PROCEDURES ORDERED BY NURSE PRACTITIONERS (N=43)

Reasons	UTHS		UHS		TOTAL	
	#	%	#	%	#	%
Lack of Knowledge for this problem	11	17	14	18	45	17
Lack of Skills for this problem	39	22	16	20	55	20
Outside NP scope of practice	35	20	13	16	48	18
Lack of clinic resources	70	39	37	46	107	40
Other	4	2	8	9	12	5
TOTAL	179		88		265	

Figure 5

Table 3: SPECIALISTS TO WHOM PATIENTS WERE REFERRED (N=105)

Specialist	UTHS		UHS		TOTAL	
	#	%	#	%	#	%
Allergist	1	1	0	0	1	1
Otolaryngologist	7	11	1	3	8	7
Endocrinologist	3	5	0	0	3	3
Dermatologist	4	6	5	12	9	9
Gastroenterologist	1	1	1	3	2	2
Gynecologist	4	6	5	12	9	9
MD in clinic	0	0	5	12	5	5
Neurologist	2	3	2	5	4	4
Obstetrician	3	5	1	3	4	4
Orthopedist	9	14	2	5	11	10
Ophthalmologist	4	6	3	8	7	6
Other	27	42	15	37	42	40
TOTAL	65		40		105	

Other reasons for referral at UHS included patient insisted (n=2), no response to treatment and followed by private medical doctor (n=2), nurse practitioner out of the clinic when patient arrived, and research study. Other reasons for referral at UTHS were treatment by other PCP (n=2), patient request, and after clinic hours.

The types of specialists to whom patients were referred from the two clinics were varied (Table 3). At UTHS, 65 referrals were made to specialists while UHS made 40 referrals to specialists. Across both settings, the specialties to which NPs referred the most patients were orthopedics (10%) and dermatology (9%). Although UHS referred 5 patients to the physician at the clinic, UTHS made no such referrals. Additional specialists to which NPs referred patients at UTHS were urology (n=2), oncology (n=3), cardiology (n=4), optometry (n=1), surgery (n=5), psychology (n=2), physical therapy (n=3), chiropractor (n=1), pediatrician (n=1), rheumatology (n=1), employee assistance program (n=1), primary care physician (n=2), and immunology (n=1). NPs at UHS referred patients to the following additional specialists: cardiology (n=3), chiropractor (n=1), urology

(n=2), midwife (n=1), oncologist (n=1), surgeon (n=1), and primary care physician (n=2).

{image:5}

Patients were referred for a variety of diagnostic tests (Table 4). A total of 57 patients were referred from UTHS and 33 patients from UHS. As shown in Table 4, the majority of diagnostic tests for which patients were referred at UTHS were for mammograms and at UHS, colposcopy. In addition to the predetermined categories, NPs at UHS also referred a patient for a colonoscopy while NPs at UTHS referred patients for 24 hour holter monitoring (n=2), sigmoidoscopy (n=1), EMG (n=1), arthroscopy (n=1), and arterial flow study (n=1).

No referrals were made for admission to a hospital over the 3 month period. However, 3 patients at UHS and 1 patient at UTHS were referred to the emergency department. A total of 5 patients (n=3 at UTHS and n=2 at UHS) were referred for mental health counseling; 3 patients from both UTHS and UHS were referred for fitness counseling and nutrition counseling.

A total of 35 x-rays were ordered at UTHS and 12 at UHS. At UTHS, 18 chest films were obtained and 17 extremity films. At UHS, 4 chest films, 7 extremity films, and 1 back film were ordered.

DISCUSSION

This quality assessment project shows similar trends in referral patterns of NPs in two NP managed clinics in large Southern metropolitan cities. Both clinics serve student populations and one of them also serves a large managed care population as well as several occupational health contracts throughout the city.

If NPs are to be recognized as primary care providers (PCPs) and reimbursed by managed care organizations (MCO) it is important for the MCOs to understand the strengths and limitations of NP practices in regards to referral patterns. This quality assessment project goes a long way in helping to understand some of those NP referral patterns.

The results of this quality assessment project indicate that UTHS had a referral rate for diagnostic and specialists care of 6.17% and UHS a referral rate of 7.05%. The specialists to whom the NPs referred most frequently (Table 3) were orthopedists, dermatologists, gynecologists, otolaryngologists and ophthalmologists. Assuming these referrals were problems which even a qualified internist or

family physician were not able to handle in his/her office then all of the referrals would not be considered as "excess referrals" (referrals over and above the amount a physician would have referred) just because the NP provided the care. However, it should not be inferred that the fewer the referrals the better the care. This may or may not be the case. Quality of care was not the issue of this study but rather referral rates from two nurse practitioner managed clinics serving students, employees and private patients.

In this case, a managed care company or group practice would not have any added costs for any of these referrals made by the NP. On the other hand, if these referrals could have been handled by the internist or family physician then costs associated with the referral would be considered extra costs for providing that care (11).

Reasons for this surprisingly low referral rate may include the relatively healthy population served by these two clinics and a natural patient self selection of critically ill patients to seek out a specialist for care rather than a NP. On the other hand, this may be an indicator of the ability of NPs to deliver comprehensive primary care to the vast majority of students and employees in a university setting. In either case, MCOs may want to take note of this when considering whether or not to place NPs on their provider panels especially for care delivery in college health settings.

Another interesting finding relates to health maintenance issues. Nurse practitioners pride themselves on providing health maintenance for patients. However, in this study over the three month period there was only one referral from the two clinics for flexible sigmoidoscopy. Both clinics provide care to a student population with UHS deriving almost all of its patients from the student body. In this case the need for such a routine screening procedure seems highly unlikely. The UTHS, however, also sees patients of all ages and would be expected to have a much higher rate of referrals over a three month period for this particular procedure as well as other more acute and chronic conditions. It is unclear as to why this particular referral rate for flexible sigmoidoscopies was so low during the study period but may indicate a need to focus on this health maintenance in the future. The referral rate for routine mammograms, however, seemed more in line with appropriate screening measures for the populations served.

Considering all referrals, the UTHS rate of gynecological referrals was 6 % while UHS was 12% (Table 3). While at first this seems disproportional between the two clinics it

should be kept in mind that UTHS has a Women's Health Care Specialist who provides colposcopy services which accounts for the difference in referral rates for this service (Table 3).

The reasons for referrals among the two sites were remarkably similar. By and large, referrals were made due to lack of clinic resources (i.e. no imaging services or specialty services in clinic). UTHS indicated this in 39% of the referrals and UHS indicated it in 46% of the referrals. Lack of skills (UTHS 22% and UHS 20%), outside the NP scope of practice (UTHS 20% and UHS 16%) and lack of knowledge (UTHS 17% and UHS 18%) all seemed less important in terms of reasons for referral rather than the lack of resources.

The literature is not helpful in terms of providing a benchmark for referral patterns of NPs. Further practice data including descriptions of referral patterns, types of health care problems seen, utilization of lab and x-ray studies and costs of care are needed. Unfortunately, most NP managed clinics are not equipped to gather data on a large scale for study purposes. The electronic medical record (EMR) is one way with which to capture these data for practice analysis, move forward a research agenda, and facilitate an overall continuous quality improvement program for the practice. The ability to document overall practice quality of care in nurse-managed clinics in the future will largely depend on the presence or absence of an EMR.

Three years ago the UTHS installed an EMR system (Practice Partners from Physician Micro Systems in Seattle, WA). This particular system provides for patient scheduling, billing and clinical records. A new Windows version of the software will allow for data analysis of this type with remarkable ease. With systems like this, provider referral patterns are easily identified and can serve as indicators for needed continuing education efforts of providers as well as staffing needs by specific specialists. For example, if dermatology referrals are high, then either the NP can obtain further continuing education in dermatology issues or the

clinic might want to hire a part time dermatologist to attend clinic every week or two.

The need for more sophisticated and detailed studies related to referral patterns of NPs is apparent. These future studies must necessarily focus on more specific data related to NP referrals as they relate to physician collaboration, costs associated with those referrals, and other reasons than those described here of why NPs refer patients to other resources for care.

References

1. Office of Technology Assessment. (1986). Nurse practitioners, physician assistants, and certified nurse-midwives; a policy analysis. Washington, D.C.: Government Printing Office, (Health Technology Case Study 37, OTA-HCS-37).
2. Brown, S. A., Grimes, D. E. (1993). A meta-analysis of process of care, clinical outcomes, and cost-effectiveness of nurses in primary care roles: nurse practitioners and certified nurse-midwives. Washington, D.C.: American Nurses' Association.
3. Hall, J. (1990). Performance quality, gender and professional role: a study of physicians and nonphysicians in 16 ambulatory care practices. *Medical Care*, 28, 489-501.
4. Salkever, D. S. (1992). Episode-based efficiency comparisons for physicians and nurse practitioners. *Med Care*, 20, 143-53.
5. Avron, J. (1991). The neglected medical history and therapeutic choices for abdominal pain: a nationwide study of 799 physicians and nurses. *Arch Intern Med*, 151, 694-8.
6. Buppert, C. K. (1995). Justifying nurse practitioner existence: hard facts to hard figures. *The Nurse Practitioner*, 20:43-8.
7. Scudder, L. (1997). Nurse practitioners: their productivity and prescriptive practices. *Nurse Practitioner World News*, 2,(1), 3-4.
8. Record, J. C., Schweitzer, S.O. (1981). Potential effects on staffing and costs: estimates from the model. In: Record JC, ed. *Staffing primary care in 1990: physician replacement and cost savings*. Springer series on health care and society. Vol. 6. New York: Springer Publishing, 87-114.
9. Hooker, R.S., McCaig, L. (1996). Emergency department uses of physician assistants and nurse practitioners: a national survey. *American Journal of Emergency Medicine*, 14, 245-9.
10. Cole, F. L., Mackey, T. A. (1996). Utilization of an academic nursing center. *Journal of Professional Nursing*, 12, 349-353.
11. Green, A. H., Conway-Welch, C. (1995). Negotiating capitated rates for nurse-managed clinics. *Nursing Economics*, 13, 104-106.

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