

# The Nature and Content of Physician Telephone Calls in a Private Practice

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*Telephone encounters received by two physicians in a private rural family practice setting were examined over a 61-day sampling period. A total of 1,264 calls were received during the study period, with 905 (71.6 percent) being received in the office setting. An average of 10.4 calls per physician were received each day, and a mean of 16.2 minutes per physician was spent each day with telephone encounters. Each call was brief, lasting 1.6 minutes (standard deviation 1.5 minutes); administrative and personal calls each lasted significantly longer than other call categories ( $F = 20.8, P = .0001$ ). More chronic disease diagnoses tended to be handled during office when compared with nonoffice telephone encounters. The majority of calls (932, or 83.1 percent) did not require a face-to-face visit as judged by the physician. Of the office calls, 58.2 percent were handled by the physicians through a message system rather than a direct physician telephone call. It is estimated that uncharged care over the telephone saved patients in this practice up to \$150,000 per year.*

Much of the practice of primary care medicine occurs over the telephone rather than as face-to-face physician-patient encounters. As government, business, and insurance leaders grapple with new ways to limit health care expenditures, it is often overlooked that physician charges for office and hospital services subsidize this almost always free mode of care. Solberg et al,<sup>1</sup> in a study of 139 Minnesota physicians, found that there were 1.99 office telephone calls for every office visit, with physicians directly handling 0.38 calls per visit. Bergman and Rosenblatt<sup>2</sup> detected a rate of 0.15 to 0.22 after-hours calls per scheduled visit for a university residency practice. Knopke et al,<sup>3</sup> in a study of 100 Wisconsin family physicians, determined that 14.9 percent of all patient contacts, presumably day and night, were by the telephone, with physicians averaging about 6.5 telephone contacts per day, or 0.24 calls per office contact. These studies all describe unreimbursed physician care services. With some Medicare carriers enforcing a policy of reimbursing a maximum of one office or nursing home visit per month for the same chronic diagnosis, the telephone call rate might become even higher for the elderly.

Curtis and Talbot<sup>4</sup> have reviewed extensively the lit-

erature regarding telephone use in American primary care. Descriptive studies have investigated the content of telephone calls either during or after office hours. Few studies, however, have examined the entire spectrum of clinical and nonclinical telephone calls received both during and after office hours. The Knopke et al Wisconsin physician study has been mentioned, but this study included only four sampling periods of one day each per physician. Fischer and Smith<sup>5</sup> studied telephone calls in four Connecticut family practices for a three-month period but included only symptom-related calls.

Results of previously studied after-hours telephone calls in Missouri academic and private settings<sup>6</sup> generated interest in a descriptive analysis of all practice-related telephone calls in an active full-service private family practice. It was hypothesized that a large proportion of primary care occurs over the telephone at substantial cost savings to patients. Specific questions of interest included how much time was spent with various categories of telephone calls in office and nonoffice settings. Of additional interest was the number of calls that were managed with a written in-office message system not requiring the physician to directly call back the patient.

## METHODS

The practice setting was a two-physician fee-for-service family practice that included obstetrics. This private

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TABLE 1. CHARACTERISTICS OF PATIENT CALLERS COMPARED WITH TOTAL PATIENT POPULATION

Characteristics	Telephone Encounters March–April 1986 No. (%)	Registered Patients May 1984– December 1985 No. (%)
Sex		
Female	736 (61.6)	2273 (61.0)
Male	459 (38.4)	1451 (39.0)
Age (years)		
>0, <2	174 (14.7)	269 (7.5)
>2, <10	71 (6.0)	478 (13.3)
>10, <20	50 (4.2)	524 (14.6)
>20, <40	258 (21.8)	1076 (29.9)
>40, <65	243 (20.5)	697 (19.4)
>65	388 (32.8)	556 (15.4)

practice was located in a rural North Carolina town of 4,000 in a county of 25,000. In 1985 (the last full year the practice was open), there were 9,334 face-to-face patient visits, of which 8,442 were office visits. No patient charges were made for telephone calls.

The practice had a telephone call policy that included all after-hours calls being recorded on preprinted telephone call forms modified from those described by Spencer and Daugird.<sup>6</sup> These completed forms were filed in patient charts. Calls received during office hours were handled by medical assistants. Identifying data and the nature of the problem for clinical calls were completed on a form, which was then attached to the patient's chart and given to the primary physician. The physician either wrote instructions on the form for the office staff to carry out (for example, to refill a prescription or to have the patient come in) or he or she called the patient directly and filled in the remainder of the form as to impression, treatment, follow-up, and so on. Incoming office calls from the hospital, nursing home, and other physicians, as well as personal calls, were generally put through directly to the physicians. Administrative calls, such as from the practice's lawyer, accountant, or banker, were also taken directly by the physician.

After-hours calls came either to a special after-hours telephone in each physician's home or through the hospital, where a message was taken, the physician radioed, and the call returned.

The sampling period included March 1 through April 31, 1986. During this time all calls with which the physician became involved were recorded in a log kept by the physicians. This log included such items as time received, duration of call, age of caller, diagnosis, and recommended actions. Duration of calls lasting less than one minute were rounded off to one minute. For personal calls after office hours, no log entries were made.

TABLE 2. CHARACTERISTICS OF CALLS BY LOCATION RECEIVED, MARCH THROUGH APRIL 1986

Characteristics	Office	Nonoffice
Number (%) of calls	905 (71.6)	359 (28.4)
Calls per office visit	0.94	0.37
Length of call (min)	1.5	1.8*
Mean age (years) of caller	46.2	38.1*

\*  $P < .05$

### Data Analysis

Telephone log data were entered into a computerized database system (using Appleworks<sup>7</sup> on an Apple IIc). Data were analyzed using SAS<sup>8</sup> on an IBM 4381 mainframe. Categorical data were analyzed using chi-square tests, and interval level data were analyzed with the Student's *t* tests or one-way analysis of variance.

### RESULTS

During the 61-day sampling period, 1,264 calls were made to the two physicians. During this same period there were 960 office visits (telephone call to office visit ratio of 1.32). The mean age of the patient of concern was 43.8 years (standard deviation 29.3 years) with the age and sex distributions described in Table 1. Substantially more calls were received concerning patients under 2 or over 65 years of age when compared with the proportion of these two groups registered in the practice. On weekdays 1,079 calls (85.4 percent) were received, and on weekends, 185 (14.6 percent). Calls were distributed throughout the day as follows: 986 (78.1 percent) were received by the physicians during the daytime hours of 7:30 AM to 5:30 PM, 171 (13.5 percent) came from 5:30 PM to 11:30 PM, and 105 (8.3 percent) from 11:30 PM to 7:30 AM.

The calls received in the office compared with other nonoffice locations, such as hospital, home, or beeper, are displayed in Table 2. Nine hundred five calls (71.6 percent) were received in the office (0.94 per office visit), whereas 359 (28.4 percent) were nonoffice calls (0.37 per office visit) during the two-month sampling period. Nonoffice calls showed statistically significant differences for longer duration and younger age. There were 21.0 office calls (10.5 per physician) received on the average for each day that the office was open.

An average of 32.4 minutes (16.2 per physician) were spent on the telephone daily during the study period, with each call lasting 1.6 minutes (standard deviation 1.5 minutes). When analyzed by the type of caller, patients or their relatives made up approximately one half of the tele-

TABLE 3. TYPE OF CALLS BY SOURCE, MARCH THROUGH APRIL 1986

Type	Total Calls No. (%)	Calls per Day	Minutes (%) per Day	Minutes per Call
Patient				
Direct*	684 (54.1)	11.2	18.3 (56.3)	1.6
From hospital	451 (35.7)	7.4	9.4 (29.0)	1.3
From nursing home**	59 (4.7)	1.0	1.2 (3.8)	1.3
Administrative	56 (4.4)	0.9	2.7 (8.3)	2.9***
Personal	14 (1.1)	0.2	0.8 (2.6)	3.6***
Totals	1264	20.7	32.4	1.6

\* Calls from patient, relative, or friend  
 \*\* Nursing home calls, including 20 calls from home health services  
 \*\*\* P < .05

TABLE 4. MOST COMMON TELEPHONE DIAGNOSES, MARCH THROUGH APRIL 1986

Rank	Diagnosis	No. (%)
1	Gastroenteritis	69 (5.8)
2	Upper respiratory tract infection/pharyngitis	68 (5.7)
3	Hypertension	50 (4.2)
4	Pneumonia	45 (3.8)
5	Abdominal pain	37 (3.1)
6	Stroke	35 (2.9)
7	Diabetes	35 (2.9)
8	Anxiety	33 (2.8)
9	Back pain	27 (2.3)
10	Medication side-effect	26 (2.2)

TABLE 5. TYPE OF CLINICAL PROBLEM, MARCH THROUGH APRIL 1986

Call Characteristics	New Problem	Follow-up Problem
Number (%) of calls	417 (34.8)	782 (65.2)
Calls per office visit	0.43	0.81
Length of call (min)	1.7	1.4*
Mean age (years) of caller	31.8	50.2*

\* P < .05

TABLE 6. CALLS RESULTING IN RECOMMENDATION FOR VISIT

Call Characteristics	Calls Needing Visit No. (%)	Calls Not Needing Visit No. (%)
Number of calls	190 (16.9)	932 (83.1)
Calls per office visit	0.20	0.97
New problems	116 (61.1)	278 (29.9)*
Follow-up	74 (38.9)	652 (70.1)*
Length of call (min)	1.6	1.4
Mean age (years) of caller	38.8	44.4*

\* P < .05

phone encounters both by numbers of calls received and by total time spent (Table 3). Of the remainder of calls, the majority came from the hospital and usually concerned hospital or emergency room patients. Personal and office administrative calls took a significantly longer time per call ( $F = 20.81, P = .0001$ ), although they accounted for only 10.9 percent of total telephone time.

The ten most common diagnoses dealt with over the telephone are presented in Table 4. Telephone encounters received while in the office tended to deal with more chronic conditions. The chronic diseases of hypertension, diabetes, and stroke accounted for 102 of 841 office calls for which diagnoses were available (12.1 percent). For calls received outside of the office, these same diagnoses accounted for only 18 of 350 calls (5.1 percent) (chi-square 13.3,  $P < .001$ ).

New problem telephone encounters presented to the physicians less often than those for follow-up of old problems (Table 5). Telephone encounters for new problems were also longer in duration than those for follow-up (1.7 minutes vs 1.4 minutes,  $P = .0001$ ). The breakdown of calls according to a physician-perceived need for a visit

contrasted with an as-needed follow-up (described as follow-up only if the problem did not resolve as expected) is displayed in Table 6. The substantial majority of calls (932, or 83.1 percent) were not felt to need a definite face-to-face visit. Such as-needed follow-up calls concerned an older population ( $P = .019$ ). Calls requiring a visit tended to be for new rather than follow-up problems (chi-square 67.2,  $P < .0001$ ).

Telephone encounters also differed in how they were received by the physician. Considering office calls, 224

(24.7 percent) were received directly by the physician. Written messages were first taken by the office staff and forwarded to the physician for the remaining 681 (75.3 percent). Calls that resulted in a written message to the physician were dispensed with more quickly than those calls taken directly by the physician (1.3 minutes vs 2.2 minutes,  $P = .0001$ ). Of the 657 encounters received by a written message, 119 (18.1 percent) were answered by the physician with a personal telephone call, and the remaining 538 (81.9 percent) were answered with written instructions to the office personnel. Only 67 (10.2 percent) of the calls received by the physician by message resulted in a physician requesting an office visit. Overall, 58.2 percent of calls coming to the physician in the office were taken care of by the physician writing instructions to office staff.

## DISCUSSION

Few similar studies exist for comparison with these data. The Robert Wood Johnson *Medical Practice in the United States* survey,<sup>9</sup> now a decade old, included academic physicians and residents. Their data revealed an average of 32.3 patient encounters by telephone per week for family physicians, equivalent to about 282 expected encounters per physician for the 61-day period studied. This expected number of calls was much lower than the actual 597 patient-related calls per physician. The *Medical Practice in the United States* survey also differs in time spent on "telephone assessments," for which they found family physicians in partnership and group practice spending 0.5 hour per day. This figure compares with the present findings of 16.2 minutes (0.27 hour) per physician per day. Thus the practice studied seems to have had many more telephone encounters, but less total time was spent with them, than this national survey indicates the "average" family physician did a decade ago.

In a study conducted from 1970 to 1973, 100 Wisconsin family physicians averaged 6.5 telephone patient contacts per day, a ratio of 0.24 calls per office visit.<sup>3</sup> This figure is low compared with 1.32 total calls per visit in the current study. Solberg et al<sup>1</sup> carried out a more recent survey in 1979 of 33 Minnesota clinics, which included 139 physicians, most family physicians. All incoming office calls were recorded for a one-week period. There was an average of 172 calls to the offices per week (1.99 calls per office visit). Only 19.1 percent of these calls involved physicians, however, equivalent to 0.38 calls per office visit. This rate is low compared with the much higher rate of 0.94 office calls per office visit in the present study. The same researchers performed a similar study in 1980 for after-hours calls involving eight Minnesota family physicians.<sup>10</sup> The physicians averaged a rate of about 0.1 call per office visit

compared with the rate of 0.37 nonoffice calls per visit in the studied practice.

Thus in comparing these data to similar but older data for private family physicians, there was a much higher volume of office and nonoffice telephone calls in the present study. Several possible reasons may explain this finding. First, the current study took place in an economically deprived county. Many patient may have called with the intent of dealing with medical problems without the cost of an office visit. Second, the practice was receptive to telephone calls, having an organized telephone policy that encouraged methodically answering telephone inquiries in a timely manner. Perhaps the patient population became aware of this policy and utilized more telephone communication. Another possibility was that the physicians planned to close their practice and move out of the state three months after this study began. That this information was available to the patient population may have affected behavior.

This study demonstrates the importance of the telephone in the economically invisible network of health care provided by the family physician. The 83.1 percent of total telephone encounters not felt by the physician to need a visit would not be "seen" by health planners, regulatory agencies, and insurance companies, as they were cared for without charge, particularly the follow-up care of medical problems, which in this sample were cared for without recommendation for a visit in almost 9 of 10 cases. Even problems newly presented to the physicians, however, were dispensed of without need for a visit in seven of 10 encounters. Thus the half-hour on the telephone per day dealing with 19.6 patient calls had the potential of forestalling 16 office visits for this two-physician practice. These potential visits demonstrate the large amount of uncompensated medical care being provided over the telephone in family practice. In this particular practice the average charge per office visit was \$26 (1985 practice data). If all 16 patient calls would have resulted in face-to-face encounters (either in the office during hours, in the office after hours, as was sometimes done, or in the emergency room during or after hours), then \$416 was saved by the patient population of the practice on average per day. The actual amount saved might even be higher given that an emergency room visit was likely to be more costly. The annual savings of \$151,840 ( $\$416$  per day  $\times$  365 days per year) was more than one half of this practice's gross income. Even if many of these patients would not have come in for a face-to-face encounter had there been no telephone access to the physician, this number still represents a sizable economic savings for patients in this fee-for-service noncapitation practice. A portion of this economically invisible care may have been made up in the form of marketing benefits for the practice because of such telephone accessibility. The study did not

address issues of quality of care and patient outcomes for problems dealt with by telephone.

The findings of this study give a glimpse of the importance of telephone calls initiated by those other than patients or their relatives. Only one half of calls were found to be patient initiated. With increased administrative requirements and an increase in the proportion of patients using nursing home or home health services over the next decade, it would be expected that the percentage of calls in these categories will grow from their present 9 percent.

The telephone message policy in this practice appeared to be effective in the management of the physicians' time on the telephone during the office hours. With almost six out of ten office telephone encounters being handled by the physician with written instructions for the office staff to carry out, an estimated 11.3 minutes of physician telephone time were saved per day (34.8 percent of the actual telephone time spent). This telephone policy may also partially explain why the total telephone time was less than that in the previously mentioned *Medical Practice* survey.<sup>9</sup> Issues of quality of care, patient satisfaction, and marketing of physician services may well enter into the development of such a telephone policy in a particular practice. The perceived advantages of the policy developed in the practice studied here included fewer interruptions from face-to-face office visits and an ability to control when calls were answered through effective organization of office personnel.

The primary question in any study involves the ability to generalize the data sampled to other populations. In this case, how safely can the findings in a 61-day sample in rural North Carolina be generalized to the population

of board-certified, private practice family physicians? While variations will exist based on the telephone policies (if any) developed in a given practice, it would seem safe to conclude that a significant number of patient encounters in private family practice occur over the telephone at a significant economic savings to the patient. With the changing administrative and economic demands on physicians, as well as more emphasis on physician office management in the coming years, telephone medicine will be an important area to monitor in family practice.

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