

# The Nature and Management of Telephone Utilization in a Family Practice Setting

Paul M. Fischer and Stephen R. Smith, MD, MCH  
Chapel Hill, North Carolina, and Farmington, Connecticut

Study of the telephone practice in four family practice settings reveals a complex interaction between patients, physicians, and receptionists. Patients present a limited number of complaints—80 percent of complaints represent 25 common chief complaints, and 95 percent represent 50 chief complaints. Little difference was observed between the symptoms reported by patients to the physicians as compared to those received by the receptionist staff. Physicians are more likely to use the telephone contact to treat the patient's complaint with home care advice or a prescription. Receptionists are more likely to use the telephone contact for scheduling an office visit.

The telephone is an important part of medical practice in the United States. Studies have shown that 25 percent of new diseases are reported by telephone, 24 percent of all medical care contacts take place by telephone, and 12.5 percent of a physician's time is spent on the telephone.<sup>1-3</sup> While these data indicate the importance of the telephone in medicine, there have been few studies on the telephone care system.

Greenlick's study of over 5,000 telephone calls to physicians in a prepaid group practice during regular office hours showed that 47 percent concerned symptoms, 29 percent concerned prescriptions, and 11 percent dealt with laboratory or radiologic test results.<sup>2</sup> In 20 percent of those

calls of a medical nature the persons were asked to come in for an office visit. Other studies have served to confirm this distribution but comparisons in the literature have proven difficult. Much of the research on telephone utilization is from the pediatric literature and, thus, is only partially applicable to family practice. In a study by Katz et al,<sup>4</sup> an analysis of 2,520 calls to pediatric health associates indicated that 59 percent involved medical problems and of those, 45 percent required same-day appointments. In a similar study by Strain and Miller of a pediatric practice, half the calls related to a medical problem, and of those, 42 percent required an office appointment.<sup>5</sup>

Several papers on after-hours calls in general practice come from the British Commonwealth, but it appears that the situation is so different in the United Kingdom, New Zealand, and Australia that extrapolation to the United States is not possible. Calls in those countries are far less frequent, are for more serious problems, and more often result in hospitalization.<sup>6,7</sup>

One article in the Canadian literature by

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From the Department of Family Medicine, University of Connecticut Health Center, Farmington, Connecticut. At the time this article was written, Mr. Fischer was a medical student at the University of Connecticut School of Medicine. Requests for reprints should be addressed to Dr. Stephen Smith, Department of Family Medicine, Room L-4075, University of Connecticut Health Center, Farmington, CT 06032.

Westbury describes the telephone workload of a single family practitioner.<sup>8</sup> The study examined calls taken by the physician during office hours and found that the telephone practice accounted for about 20 percent of contacts between physician and patient and five percent of the physician's time. The study did not describe calls handled only by the receptionist, after-hours calls, nor the problem for which the call was made.

Curtis described the after-hours calls for a six-month period in the University of North Carolina family medicine residency program.<sup>9</sup> However, this study did not analyze the calls received during regular office hours.

No previous study has characterized the nature and management of incoming patient telephone calls both during regular and off hours in a typical family practice in the United States. It is the purpose of this paper to describe and analyze the symptom content and disposition patterns of the telephone practice in a family medicine office setting.

## Methods

Four sites were selected for study representing a variety of family practice settings in Connecticut.

Site A is a two-physician family practice in a rural eastern Connecticut town. The office is staffed with four medical technologists all of whom triage telephone calls made by patients to the office.

Site B is a two-physician family practice in a rural central Connecticut town. Incoming telephone calls are managed by a receptionist with referral to the physician.

Site C is a three-physician family practice office in a small city in western Connecticut. Incoming telephone calls are managed by a receptionist with referral to a registered nurse or physician.

Site D is an office unit for a family medicine residency program in a suburb of a large urban area. Incoming telephone calls are managed by a receptionist with referral to a registered nurse or physician.

None of the receptionists in the above settings had received training specific to their respon-

sibilities for telephone management of patient complaints.

The four practice sites participated in this study during the period from November 1977 to February 1978. Office staff who managed incoming telephone calls were asked to log each symptom-related call. Administrative calls, including those for prescription refills and test results, were not recorded. Information to be logged included chief complaint, age (infant = less than 2 months, pedi = 2 months to 12 years, teen = 13 to 20 years, adult = 21 to 64 years, elder = greater than 64 years), sex, and disposition (information given, referral to RN, referral to MD, urgent visit scheduled, non-urgent visit scheduled).

Two physicians at Site A, two at Site B, and one at Site C were similarly asked to log their symptom-related telephone contacts with patients. These calls consisted of those referred to them during the day by the receptionist staff or nurse and those from patients after hours when the physician was on call. Physicians were asked to log chief complaint, age (as above), sex, and disposition (information only, information and prescription, urgent visit, non-urgent visit).

For both receptionist and physician logs, an "urgent visit" was defined as "a necessary visit with a health care professional within eight hours." This contact included house calls, patient visits to the office, and patient visits to an Emergency Room.

The logged chief complaints were analyzed by grouping them within 50 common chief complaints seen in a primary care setting. A variety of logged chief complaints were combined in some cases (ie, "congestion," "cold," and "sore throat" were included in "URI") consistent with problem groupings in the ICHPPC. Ninety-five percent of patient complaints were coded within the listing of 50 common chief complaints.

## Results

During the three-month study, 2,120 telephone calls were logged. These included 1,533 (72 percent) which were received by the receptionist staffs and 587 (28 percent) which were logged by the participating physicians. The time required for

**Table 1. Chief Complaint Profiles for Receptionist-Managed Calls Percentages of total (N=1,533)**

	Total
URI	24.2
Fever	15.9
Ear Pain	4.4
Rash	3.7
Flu	3.5
Abdominal Pain	3.5
Nausea, vomiting	2.8
Back Pain	2.5
Swollen Glands	2.4
Skin Infection	2.1
Headache	1.9
Diarrhea	1.9
Joint Pain	1.6
Eye Infection	1.5
Lumps, masses	1.3
Chest Pain	1.3
Dysuria	1.1
High Blood Pressure	1.0
Sprain, strain	1.0
Question of Fracture	.9
Dizziness	.9
Dyspnea	.9
Fatigue	.9
Laceration	.9
Urinary Frequency	.8

logging these telephone calls was five to ten minutes per office per day.

The four sites were found to be similar in regard to both patient age and sex data. The data describing disposition show some variation between sites. Site C disposed of incoming calls more frequently by providing information or referral to a non-physician. This reflects the use of a nurse in this office to manage calls and accept referrals of telephone complaints that would have been referred to the physician in the other study sites. Variations are also seen in the percentage of urgent visits (range: 29 to 67 percent) and non-urgent visits (range: 9 to 44 percent). The range of the sum of these two disposition choices shows less variation (70 to 82 percent). This difference between sites reflects how easily the scheduling

methods accommodate urgent visits for patients with acute symptom complaints.

Table 1 shows the averaged ranked order of chief complaints presented to the receptionist over the telephone at the four sites. The list of 25 most frequent chief complaints accounts for 81.5 percent of all logged complaints. Percentage differences between sites are small and are found in the less frequently reported chief complaints.

Table 2 reports the disposition data by chief complaint for the receptionist-logged data. The telephone calls from all four sites were pooled to generate this data.

Age, sex, and disposition data for the telephone calls logged by the physicians were collected by five family physicians in private practice. Physicians from Site D did not participate in this aspect of the study. Differences in the disposition data can be seen at the three practice sites. Site C shows a higher percentage of patients who are given an urgent visit, while fewer are managed by telephone information alone. This physician's home is adjacent to the office site which makes urgent after-hours visits more convenient than at the other office sites.

Table 3 reports the chief complaint and disposition data for the physician-logged telephone calls. The 25 most common chief complaints account for 80.0 percent of all of the logged patient complaints.

## Discussion

These results characterize the complex interaction of patients, office staff, and physicians which is involved in the telephone health care system in primary care office settings.

Fifty-nine percent of all receptionist-managed telephone calls were from female patients. Forty-two percent concerned male patients. This pattern was seen in each of the four practice sites. Data describing the female-to-male ratio of the practice populations is not available.

Curtis noted a higher frequency of female-related calls even when compared to their proportion in the practice population, but it did not exclude maternity-related calls.<sup>9</sup> Webster et al did exclude maternity-related calls and found that the calls per capita did not differ by sex.<sup>7</sup>

The population group with the greatest utilization in this study was the adult group (age 21 to 64 years). Greenlick's study showed an increase in utilization of all types of telephone contacts with increasing patient age.<sup>2</sup> This was attributed to calls concerning prescriptions. Such calls were not included in the present study. Webster et al did show a higher utilization with increasing age on a per capita basis but did not delineate the purpose of those calls.<sup>7</sup> Patients over age 65 showed low utilization in this study (six percent). A similar result was reported by Curtis (1.9 percent).<sup>9</sup>

The disposition of patient problems by the receptionist staff shows that six percent received information, one percent were referred to a non-physician staff person (usually a nurse), 15 percent were referred to a physician, 54 percent received urgent visits, and 24 percent were given appointments for non-urgent visits. Thus, 85 percent of all symptom-related calls were managed by the receptionist staff without referral to a physician. The disposition decision was made by considering the patient complaint, chronicity of the symptom, and knowledge of the particular patient. An unexpected result was that 54 percent of the patients received an urgent (same-day) visit. To accommodate this volume of patients, each office regularly leaves open appointment time for such urgent patient visits.

Similar disposition data for a pediatric setting using specially trained health assistants, has recently been reported.<sup>4</sup> In this study 30 percent of patients received advice for home care, 8 percent were referred to a nurse practitioner, 10 percent were referred to a physician, 45 percent received same day visits, and 2 percent received future appointments. The use of trained pediatric health assistants was shown to reduce the number of unnecessary visits for mild symptoms in acute self-limiting conditions and to reduce the number of calls per pediatrician per day from 25 to 3. Although that study was done in a pediatric setting, a comparison with the data in this study is of interest. Specific training of personnel for the management of telephone patient complaints resulted in a higher percentage of patients managed by home care advice (30 percent compared to 6 percent in this study) and a lower percentage of urgent and non-urgent patient visits (47 percent compared to 78 percent in this study). The effect of training suggests that a reduction in the number

of office visits is possible, while promoting the home treatment of some patient complaints.

Table 1 shows the 25 most frequently reported patient complaints that were presented to the receptionist staff. The period of this study spanned the upper respiratory tract infection and flu seasons. The data, therefore, represent a higher percentage of the complaints seen with these illnesses than would be expected in a year-long study. Upper respiratory tract infection symptoms accounted for 24.2 percent of all patient complaints. The symptoms: sore throat, upper respiratory tract infection, and cough accounted for 26.1 percent of patient complaints in the study by Katz.<sup>4</sup> The second most frequent chief complaint was fever (15.9 percent). This was a common co-symptom with the complaints of upper respiratory tract infection, earache, and flu. The remaining symptoms were reported with a much lower frequency. Ear pain ranks third in frequency and accounts for 4.4 percent. The 25 most frequent complaints account for 81.5 percent of all patient complaints.

The receptionist disposition data (Table 2) show that for each chief complaint, the receptionist makes a decision from among the various disposition choices. No fewer than three disposition choices were used for each of the reported chief complaints. For 16 of the 25 most frequent complaints, four or five disposition categories were used. This is evidence of the major role played by the receptionist staff in determining the nature of the health care provided in the office setting.

Information alone was provided for chief complaints ranging from dyspnea to diarrhea. The greatest percentage of calls handled in this manner was for the chief complaint of flu (30 percent). This represents the use of receptionist staff to provide health care advice for a common self-limiting illness. Such a role could be expanded in other patient complaints if the triage responsibilities of receptionist staff were formalized and received educational attention.

Only one percent of the telephone calls was referred to a non-physician in the office. Only six of the 25 common complaints were handled in this fashion. In the study by Katz, eight percent of calls were referred to a nurse practitioner.<sup>4</sup> In a recent article such pediatric nurse practitioners were found to manage telephone problems better than practicing pediatricians.<sup>10</sup> The role of such

**Table 2. Disposition Data for Receptionist-Managed Calls**  
 Percentages of total (N=1,533)

	Information	Refer to non-MD	Refer to MD	Urgent Visit	Non-Urgent Visit
URI	4	1	9	68	19
Fever	2	1	8	77	13
Ear Pain	1	0	7	71	20
Rash	10	3	20	45	23
Flu	30	3	10	40	16
Abdominal Pain	1	0	18	64	16
Nausea, vomiting	2	0	32	58	8
Back Pain	2	0	19	54	25
Swollen Glands	0	0	4	76	20
Skin Infection	7	2	17	54	20
Headache	8	0	17	47	28
Diarrhea	11	0	36	42	11
Joint Pain	10	0	3	57	30
Eye Infection	0	4	11	61	25
Lumps, masses	0	0	4	42	54
Chest Pain	0	0	21	58	21
Dysuria	0	0	9	73	18
High Blood Pressure	0	0	5	25	70
Strain, sprain	10	0	5	65	20
Question of Fracture	0	0	0	89	11
Dizziness	0	0	0	78	22
Dyspnea	6	0	28	55	11
Fatigue	0	0	24	18	59
Laceration	0	0	12	88	0
Urinary Frequency	0	0	19	56	25

non-physician health care providers in telephone management could be easily expanded from the one percent level found in this study.

Referral to a physician was the disposition choice for 15 percent of all calls handled by the receptionist staff. The complaints which were most frequently referred included diarrhea (36 percent), nausea and vomiting (32 percent), dyspnea (24 percent), fatigue (24 percent), and chest pain (21 percent). As might be expected, this list includes some of the patient complaints which require rapid and significant treatment decisions. It is interesting that even for a serious complaint such as chest pain, the physician is involved in only one of every five such complaints presented to the office at the time of the telephone call.

An urgent visit was the most frequent disposition choice by the receptionist staff (54 percent). This choice was most frequently made in cases of questionable fracture (89 percent), laceration (88 percent), dizziness (78 percent), fever (77 percent), dysuria (73 percent), and ear pain (71 percent). These are all symptoms which require an office visit either for definitive diagnosis or treatment. Less easily understood is the case for upper respiratory tract infections in which 68 percent of patients received an urgent visit. Telephone management protocols or staff education might be expected to lower the percentage of these calls which require urgent office visits.

An office appointment longer than eight hours after the telephone contact was given to 24 percent

**Table 3. Chief Complaint Profile and Disposition Data for Physician-Managed Calls  
Percentages of total (N=587)**

	Total	Prescription	Information	Urgent Visit	Non-Urgent Visit
URI	21.6	35	35	21	9
Flu	7.5	16	60	0	5
Fever	6.0	20	48	20	11
Rash	3.9	43	35	0	22
Nausea, vomiting	3.9	48	43	9	0
Headache	3.4	20	20	40	20
Chest Pain	3.2	5	26	63	5
Abdominal Pain	3.2	21	32	37	11
Diarrhea	3.1	39	61	0	0
Back Pain	2.7	31	44	19	6
Limb Pain	2.7	31	38	25	6
Anxiety	2.2	38	31	15	15
Earache	1.7	10	20	60	10
Asthma	1.7	30	60	10	0
Constipation	1.5	44	44	0	11
Skin Infection	1.5	44	56	0	0
Hematuria	1.4	0	50	38	13
Strain, sprain	1.4	13	25	50	13
Question of Fracture	1.2	0	29	57	14
Eye Infection	1.2	0	43	29	29
Drug Reaction	1.0	50	50	0	0
Frequency	1.0	33	50	17	0
Dysuria	1.0	50	17	17	17
Laceration	.9	0	0	100	0

of all patients. This disposition was made for the more chronic conditions of high blood pressure (70 percent), fatigue (59 percent), and lumps or masses (54 percent).

Physician-patient calls were logged by five physicians. These consisted of those referred by staff during office hours and those received while on call during after-hours. It was expected that there would be a difference between these calls and those logged by the receptionists because of the screening by the receptionists during the day and self-screening by patients at night and on weekends.

A high female-to-male ratio was also seen in this group of telephone calls: 49:42. The age distribution was similar to that seen in the receptionist-

logged data except for an increase in patients over 64 years (11 percent) and a decrease in teenage patients (7 percent).

The physician-disposition data show that 26 percent of patients received a prescription, 43 percent were given home care information, 20 percent required an urgent visit, and 11 percent were scheduled for a non-urgent visit. Thus, a total of 69 percent was managed without an office visit. This is in agreement with the study by Curtis which showed that 70 percent of all after-hours contacts were handled purely by telephone and were not seen by the physician.<sup>9</sup> In the present study only one in five telephone calls to the physician required an urgent visit. This underscores the potential for telephone management of a great

number of patient complaints.

The 25 most frequent complaints handled by physicians are given in Table 3. This chief complaint profile is similar to that seen by the receptionist staff. Only six symptoms that are found in Table 3 are missing in the receptionist chief complaint profile. The similarity in these two profiles indicates that symptomatology is not always a crucial element in the decision by receptionist staff to refer a call to the physician or by patients in their decisions to call a physician after office hours.

Table 3 also reports the disposition data for each of the 25 most frequent complaints. The use of telephone treatment alone (ie, information or prescription) can be seen to be an important form of treatment for a wide variety of patient complaints. An urgent visit is the most frequent disposition for only a few complaints: laceration (100 percent), ear pain (60 percent), chest pain (63 percent), question of fracture (57 percent), and strain or sprain (50 percent). In each of these an office visit is necessary for either definitive treatment or diagnosis (ie, suturing, otoscopy, electrocardiogram, or x-ray).

A comparison of the two disposition tables (Tables 2 and 3) shows a marked difference in patient management. For the most frequent symptom, upper respiratory tract infection, disposition by the receptionist staff resulted in 87 percent of patients requiring an office visit (urgent or non-urgent). For the physician-managed telephone presentations of upper respiratory tract infection, 70 percent of all complaints are managed without an office visit. A similar difference can be seen for a wide variety of the reported complaints.

It is impossible to say whether this points to the unnecessary use of office visits by receptionist staff or under-utilization of office visits by physicians, or a combination of the two. The study by Katz, employing trained pediatric health assistants, would suggest the first of these possibilities.<sup>4</sup> The second possibility is suggested by a study of the telephone diagnosis of ear pain.<sup>11</sup> This symptom is commonly treated with antibiotics after only a telephone patient contact, yet such a diagnosis for otitis media was found to be wrong in 21 percent of patients who were later followed with otoscopy. It is probable that both physician under-utilization and receptionist over-utilization are involved.

The data presented here help to characterize the composition of telephone practice in family medicine office settings. Some patient utilization issues remain because of the lack of age and sex data on the practice populations which were studied. Clarification of the physician's use of the telephone for patient management could be expanded by separating those calls handled after hours from those referred by the receptionist staff. The method of data logging used in this study was found to require five to ten minutes per day. A similar method could be used to explore these other areas.

Other topics for investigation in the area of telephone health care include: study of the process of decision making; development of complaint-specific protocols; examination of the effect of such protocols on the quality of care; development of training programs for physicians, nurses, and receptionists; and examination of the effect of such programs on the quality of the health care which is provided.

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