On-Call in a Family Medicine Residency: Implications for Patient Care and Residency Training

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All after-hours calls and visits during a two-month period in the model practice of the University of Washington's family medicine residency were analyzed. Data as to the nature and frequency of the telephone interactions were collected and analyzed, and the manner in which residents of varying experience handled these calls was compared. The study showed that the volume of after-hours calls was about two calls per 1,000 registered patients per night, with about one half of all calls coming on the weekend. Seventy-five percent of the problems were handled by telephone contact alone; four percent of the calls ended in admission to the hospital. The vast majority of calls were handled by the residents themselves, without consultation. Third year residents were less likely to prescribe medications than second year residents and were more likely to attempt to modify patient behavior than their less-experienced peers. This study presents a preliminary epidemiological cross section of the incidence and type of after-hours interactions in an ambulatory practice, suggests some methods to make training of family medicine residents more effective, and serves as a baseline for further investigation of this neglected but essential component of family practice.

Continuity of care is a cornerstone of family medicine.[1] The family physician's responsibility to his/her patients extends beyond the confines of office or of office hours; he or his surrogate must be ready and able to deal with his patients and their problems at all times.[2-4]

Postgraduate training in family medicine has adopted the model family practice unit as the vehicle for the teaching of continuous comprehensive medical care.[5] The model unit is designed to incorporate the basic elements of a community family practice. The family physician's ability to provide night and weekend coverage for his patients is a critical element in his effectiveness and viability as a practitioner. The resident, in the setting of the model practice, must gain the requisite skills to offer his patients appropriate medical information and medical care in all settings and at all times. Despite the importance of this realm of medical practice, little attention has been paid to documenting the patient-physician interactions outside the office setting or to learning enough about the process to be able to describe it and

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Table 1. Elements of After-Hours Interaction Recorded by Resident

1. Name and residency year of physician receiving call
2. Time and date of call
3. Patient's usual physician
4. Diagnostic category related to call
5. Disposition of call
   a. Patient seen or admitted
   b. Medication prescribed
   c. Consultation arranged by phone or in person
   d. Attempt made to modify the patient's behavior
   e. Kind of follow-up planned, if any
6. Appropriateness of call
7. Estimate of patient satisfaction with interaction

teach its intricacies to medical students and residents.

This study was undertaken in order to scrutinize the type and quantity of interactions that occur after hours in a developing model unit of a family practice residency. The residency studied had just entered its second year of existence. Based at the University Hospital of the University of Washington, 18 residents in three years of the residency cared for 2,260 registered patients at the time of the study. Night call was shared by the 12 second and third year residents on a rotating basis, backed up by faculty members. All calls to the Family Medical Center were directed through a page system to the resident on call; the third year residents had a year of experience in fielding these calls; the second year residents had entered the rotation for the first time at the inception of the study. The purpose of the study was to record the volume and the nature of the calls, the problems precipitating the calls, and the type of interventions used by the physicians to care for their patients. An attempt was made to see whether experience, ie, third year vs second year residents, or other variables affected the nature of the interaction.

Arrangements for coverage and night call have an important impact on the education of physicians and on the delivery of medical care. Although often neglected as a part of formal curricula, nonscheduled care is a large part of the responsibilities of a physician and often determines practice location and practice organization. This study attempts to provide some preliminary data that will, it is hoped, lead others in a variety of settings to examine this area of their practices.

Methods

Over a two-month period, every after-hours telephone call was recorded by the residents on call. A standardized telephone message tablet was used, on which were recorded the essential components of the interaction. The information collected is displayed in Table 1.

Each telephone encounter generated one message slip. On the morning after the encounter, the slip was duplicated and the original sent to the patient's personal physician for his/her information; the original was subsequently filed in the patient's chart. The duplicate was sent to the investigator. Essentially every call during these two months was recorded by the system, and the residents were very faithful in collecting and recording the information requested. The data were analyzed using a standard statistical package with the University of Washington computer.

Results

Tables 2 through 4 summarize some important facets of the data collected. The following results appear particularly salient.

Quantity and Nature of Call

During the study period there was an average of 4 1/2 calls per day, or two calls per 1,000 registered patients; almost one half of the calls came on the

Table 2. Distribution of Calls by Day of Week and Time of Day

Day of the Week	Percentage of Calls
Monday	9
Tuesday	11
Wednesday	10
Thursday	12
Friday	11
Saturday	28
Sunday	19
Time of Day	**Percentage**
11:30 pm to 6:30 am	15
6:30 am to 6:30 pm	42
6:30 pm to 11:30 pm	43

weekends, and 15 percent of the calls were made during the physician's sleeping hours. The majority of complaints mirror the composition of a normal family practice, with gastrointestinal disorders, upper respiratory infections, trauma, genitourinary problems, headaches, and problems of early infancy accounting for about one half of the total diagnoses recorded.

Nature of Intervention

In 75 percent of the calls, the problem was handled entirely by telephone with no planned follow-up. In the 25 percent of cases in which the patients were seen, two thirds were seen and treated by the physician after hours in the model practice itself. In the remainder of the instances the patients were seen in the Emergency Room or in the delivery room. Very few house calls were made during the two-month period. Four percent of the patients' telephone calls resulted in admission to the hospital.

Effect of Degree of Training

Several provocative differences did emerge between the ways in which the second and third year residents handled after-hours calls. Although each group chose to see in person the same percentage of those who called, the second year residents were twice as likely as the third year residents to prescribe a medication for the patients they saw or spoke with, a difference significant at the .01 level. The third year residents were also much more likely to be familiar with the patient, reflecting their longer tenure in the practice and larger ambulatory case load. Also, in the majority of the interactions, the third year residents attempted to affect the patient's care-seeking behavior, while only 12 percent of the encounters with second year residents led to such suggestions.

Appropriateness and Patient Satisfaction

The residents were asked to indicate whether or not they felt the calls they received were appropriate and to subjectively assess the degree of patient satisfaction with the encounter. About 18 percent of calls were judged to be inappropriate; the only pattern that emerged was that calls during sleeping hours and on weekday nights were considered significantly more inappropriate than calls at other times. There was nearly perfect correlation between calls judged inappropriate and a judgment of patient dissatisfaction. The residents felt that patients whom they felt had called inappropriately were displeased with the results of the encounter.

Discussion

Every physician entering primary care has to deal with the problem of coverage, even if his manner of dealing with it is to be unavailable. Most family medicine residents enter a shared system of coverage, either within a group practice or with other practitioners in the community. Yet, little is known about what problems actually occur at night or on weekends or how to train a person or a system to best deal with those problems.

This review of the experience of a small model group family practice in the setting of a university hospital indicates that residents can share call, transmit information, and provide adequate patient care. Most of the problems encountered at night are not life-endangering emergencies. Seventy-five percent of the calls were handled entirely by telephone and only four percent of the patients calling were ultimately admitted, one third of those to the delivery room. The load of calls was relatively light, with the exception of Saturdays. As a result of the study, a scheduled

Table 3. Major Diagnostic Categories Generating After-Hours Calls

Diagnostic Category	Percentage
Gastrointestinal (includes vomiting and diarrhea)	9
Infectious (includes upper respiratory infection)	9
Trauma (includes lacerations)	7
Genitourinary	7
Pregnancy	6
Neurological (includes headaches)	6
Problems of early infancy	5
Psychiatric	3
Otological (including otitis)	3
Respiratory	3
Dermatologic	3
Miscellaneous classifiable problems with frequency less than three percent	25
Not classifiable or no problem	14

Saturday morning clinic was initiated, reflecting the practical impact of this type of research. Most of the residents suggested therapeutic modalities to their patients which would make use of medicines that the patient already had at home, though it is intriguing that with experience the residents were less likely to prescribe a remedy or a treatment, perhaps suggesting greater confidence in the restorative properties of time and nature. A significant number of calls came during the sleeping hours and these were often felt by the awakened resident to have been deferrable until the following morning. This suggests that some sort of screener who receives and evaluates the calls might be able to save the physician a certain amount of annoyance and missed sleep, and this is an arrangement that some practices have adopted.

Training a physician to take night call is without rules or guidelines. The technique chosen by the University of Washington is to have the residents take call and handle the problems, with faculty and consultant backup readily available. The second year residents were directed to consult the faculty and did so, finding their suggestions generally helpful. The third year residents rarely consulted faculty. Both groups of residents were able to handle the vast majority of the problems without the personal intervention of another physician; specifically, outside consultants were used only once or twice—except when the patient was admitted to the hospital—during the entire two-month period.

This study is preliminary and heuristic. It provides some documentation for rather vague "feelings" about coverage situations. Several further tracks of research are suggested by these data. It would be useful to compare the experiences of practices in different settings, to include both rural and urban practices, both new and established.[6,7] It would be valuable to look more closely at the actual interaction between the physician and the patient outside of clinic and clinic hours. A scheduled visit resolves into an intricate vignette involving physician, patient, and

Table 4. Disposition of Calls and Location of Examination	
	Percentage
Disposition	
Handled entirely by telephone	75
Patient examined by resident	25
Location	
Model Family Practice Unit	63
Emergency Room	30
Obstetric Suite	5
Patient's Home	2

numerous ancillary personnel, each playing a generally well-learned and oft-rehearsed part.[8] The call for help in the middle of the night has an ill-defined scenario, and the patient's inhibitions and uncertainties are shared by the physician, bereft of his reassuring patterns and the many temporizing details of office and laboratory minutia. He must decide whether to see or not to see the patient: to see the patient is not without cost, to not see is not without hazard. The data presented here provide intriguing glimpses at random corners of the interaction: patients are counseled, treated, reassured by telephone, and in most of the cases the physician feels the call was legitimate and the patient better and happier for the encounter. But, what does the patient feel, and by what process does the physician learn how to most effectively act as the faceless resource on the other end of the telephone, and how does the physician teach the patient to best use the resource which the physician provides? Further inquiry should help answer these questions and provide a means for sharing these answers with developing family physicians.

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