After-hours Telephone Triage and Advice in Private and Nonprivate Pediatric Populations

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Objectives: To compare the content of after-hours medical triage and advice calls regarding private practice patients vs nonprivate practice patients and to assess caregiver compliance with advice resulting from these calls.

Design: Survey of after-hours medical triage and advice calls during a 2-week period (September 1 through 15, 1996).

Setting: Three private practices (serving approximately 24 000 patients) and 1 urban hospital-based, nonprivate practice (serving approximately 12 000 patients).

Subjects: After-hours medical triage and advice calls from caregivers of patients receiving their primary care in these settings.

Main Outcome Measure: Compliance with recommended emergency department (ED) or office visit referrals.

Results: A total of 286 calls regarding private practice patients and 377 calls regarding nonprivate practice patients were received \((P<.001)\). Eighty-one calls were referred by the nurse directly to the physician. Fifty-nine private practice patients and 59 nonprivate practice patients were referred to the ED. Caregivers of 94 private practice patients and 132 nonprivate practice patients were given home treatment advice. Appointments to be seen at their primary care source were given for 78 private practice patients and 160 nonprivate practice patients. Nonprivate practice patients were more likely to be referred for office care \((P=.005)\); private practice patients were more likely to be referred to the ED \((P=.01)\). Compliance with ED referrals was 42\% for patients of nonprivate practice and 46\% for private practice; for office visit referrals, compliance was 64\% for nonprivate practice and 69\% private practice patients \((P=.71\) for compliance with ED referrals and \(P=.40\) for compliance with office referrals).

Conclusions: Compliance with recommended physician encounters was not significantly different (and lower than expected) in both groups of patients. Private practice patients are more likely to be referred to the ED. Calls for nonprivate practice patients are more frequent and these patients are more likely to be referred to their primary care source. This difference may be due to caregivers of patients from nonprivate practices seeking advice for less serious conditions. Physicians should address telephone medicine with caregivers proactively during health maintenance visits.


Editor’s Note: The finding that about half of both groups did not comply with the directions to take the child to the emergency department is surprising and very worrisome. It would be interesting to know what happened to these children—and to those who did make it to the emergency department.

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After-hours telephone calls from caregivers of children are a challenge to the primary care provider. Pediatricians and family practitioners who provide primary care to children often receive numerous telephone calls, which may be due to several factors, both economic and behavioral. The current climate of medical economics emphasizing cost containment has led to increased demands on physicians to decrease the costs of office care and limit the use of emergency departments (EDs) and urgent care facilities as well as subspecialty services. This tends to increase the use of “telephone medicine” to extend the presence of the physician provider. Caregivers of children tend to be young and less medically experienced, increasing their need for contact with their primary care provider via the telephone. This is compounded by the fact that children are often perceived as more vulnerable medically and their needs often receive priority in a family, sometimes at the expense of good judgment.

Because many pediatric primary care providers find after-hours telephone cov-
PATIENTS AND METHODS

This study was approved by the institutional review board of the Children's Hospital Medical Center, Cincinnati, Ohio. The patient populations studied came from 3 private pediatric practices in suburban Cincinnati and 1 urban, hospital-based, resident continuity clinic. All calls received after regular business hours (5 PM until 11 PM Monday through Friday and 7 AM until 11 PM on weekends and holidays) were examined for the 15-day period of September 1 through 15, 1996, which included 3 weekend days, 1 holiday, and 9 weekdays. The following information was extracted from the telephone triage record and entered into a computer database: name and age of patient, time of call, date of call, caregiver concern, nursing triage advice given ( guideline used), and disposition (ED/urgent care referral, office visit, home advice).

Compliance with the recommended disposition was determined by examining the outpatient medical record (clinic and private practice) and/or the ED/urgent care facility medical record, with results entered into the database. All referrals for emergency care from the continuity clinic were made to the ED at the Children's Hospital Medical Center. All referrals for emergency care from private practice patients were referred either to the Children's Hospital Medical Center or to 1 local urgent care facility. Therefore, compliance with ED/urgent care referrals could be tracked accurately. Telephone encounter documentation ( complaint, history, disposition, and advice given) of all calls was reviewed by one of us (R.C.B.) to determine the appropriateness of the advice and disposition given by the nurse using protocol guidelines.

PEDIATRIC TELEPHONE TRIAGE AND ADVICE SYSTEM

The Pediatric Telephone Triage and Advice System (National Health Enhancement Systems Inc, Phoenix, Ariz), developed by Barton D. Schmitt, MD, is a computerized program using algorithmic protocols to evaluate medical complaints and suggest appropriate management, including referral for physician evaluation (immediate, 4 hours, 24 hours, 48 hours, 72 hours, 2 weeks) and/or advice to the caregiver for management in the home. By means of data entry into the computer as the call is being taken, complete documentation of the call is stored electronically and can be restored to hard copy as needed.

STATISTICS

Statistical analyses were performed using Epi Info, version 6.0, computer software.7 A χ² analysis was used to compare both the number of calls and compliance with disposition for the private and nonprivate practice patient groups. Patient ages were compared using the Student t test. P<.05 was considered significant.

RESULTS

The 3 suburban private practices whose calls were monitored during the study period serve a total of approximately 24,000 patients. The urban, hospital-based clinic serves approximately 12,000 patients. The tabulation below shows the payment status of the 2 groups, by percentage of patients. (HMO indicates health maintenance organization.)

<table>
<thead>
<tr>
<th>Payment Status</th>
<th>Nonprivate</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private insurance/HMO</td>
<td>10</td>
<td>95</td>
</tr>
<tr>
<td>Self-pay</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Medicaid/Medicaid HMO</td>
<td>80</td>
<td>0</td>
</tr>
</tbody>
</table>

During the study period, 663 calls were received; 377 from caregivers of nonprivate practice patients and 286 for private practice patients (31 calls per 1000 patients, nonprivate; 12 calls per 1000 patients, private; P<.001). The times of the calls are shown in Figure 1 and were distributed similarly in both groups. The types of complaints were similar and evenly distributed between private practice and nonprivate practice patients.

7. Compliance with the recommended disposition was determined by examining the outpatient medical record (clinic and private practice) and/or the ED/urgent care facility medical record, with results entered into the database. All referrals for emergency care from the continuity clinic were made to the ED at the Children's Hospital Medical Center. All referrals for emergency care from private practice patients were referred either to the Children's Hospital Medical Center or to 1 local urgent care facility. Therefore, compliance with ED/urgent care referrals could be tracked accurately. Telephone encounter documentation (complaint, history, disposition, and advice given) of all calls was reviewed by one of us (R.C.B.) to determine the appropriateness of the advice and disposition given by the nurse using protocol guidelines.
and were as follows: respiratory complaints (21%), trauma (14%), gastrointestinal (13%), rash (10%), fever (6%), and miscellaneous (36%).

The age range of nonprivate practice patients was 1 to 192 months (mean ± SD age, 39 ± 41 months). For private practice patients, the age range was 1 to 242 months (mean ± SD age, 58 ± 56 months) (P < .001). Calls were regarding children younger than 3 years in 46% of patients from private practice and 60% of patients from nonprivate practice (P = .05). The age distribution of the patients is shown in Figure 2.

Eighty-one calls were referred by the nurse directly to the physician (caregiver demanded to speak to the physician, nurse unsure of appropriate disposition). Of these, 55 were regarding private practice patients (in most instances, the caregiver had demanded to speak directly to the physician) and 26 were regarding nonprivate practice patients (in most instances, the nurse was unsure of the appropriate medical management). The remaining 582 calls (231 private, 351 nonprivate) were used to compare compliance with disposition (Table). Office visit referrals were grouped together and included referrals for a physician encounter in 4 hours, 24 hours, 48 hours, 72 hours, and 2 weeks. Significantly more nonprivate practice patients were referred to their primary care physician for an office visit during regular business hours (P = .005); significantly more private practice patients were referred for immediate evaluation to an ED or urgent care facility (P = .01). There were no differences in compliance with these dispositions. Just fewer than half of patients referred for an immediate evaluation complied with that disposition. About two thirds of patients who had been referred for an office visit for evaluation complied with that disposition.

The physician reviewer agreed with the disposition given by the nurse in 95% of calls. In all calls for which there was disagreement with the disposition given by the nurse (5%), the physician would have made a less conservative disposition than that made by the nurse (eg, home care advice rather than referral for an office visit or referral for office visit rather than an immediate visit to an ED or urgent care facility).

**COMMENT**

The results of this descriptive study of an after-hours telephone call triage service do not differ from the results of previous studies of after-hours calls for medical advice in either the types of calls received or the times the calls were received. However, comparing patients from private and nonprivate practices, the present study did show differences in the number of calls and the severity of the complaint prompting the call. Caregivers of nonprivate practice patients made more calls after-hours and called for less serious complaints. Previous studies have shown either similar rates of telephone use between private and nonprivate populations or lower rates for nonprivate practice patients. In the latter studies published before the use of protocols, increased ED use was found in conjunction with lower use of the telephone,
suggesting that caregivers sought medical care in emergency facilities rather than calling their primary care source for advice.

Several factors may contribute to the finding of increased use of the telephone by caregivers of nonprivate practice patients. The nonprivate population cared for by the hospital-based continuity clinic tends to have a higher rate of single-parent families, often with limited social support systems. Parents are commonly younger and often in school or working outside the home, which tends to limit access to primary care unless extended hours are available. These families tend to have lower levels of formal education, less medical experience, and, perhaps, less optimal parenting skills, which may result in greater anxieties about pediatric illness. Another factor increasing telephone contact with the primary care provider may be a previous experience with a delay in seeking medical care and the negative reaction of the provider in that situation.

Disadvantaged families also may have a perception of limited access to primary care, perhaps due to prior experience with other health care sources. Alternatively, there may be subtle but real factors hampering access to primary care health system and prompting greater use of the telephone. Some primary health care providers are geared toward more traditional lifestyles and nuclear families and offer only traditional 9-to-5 service with limited extended hours. Some families encounter difficulty getting to primary care facilities due to transportation problems, sibling child care, or job and school requirements, all of which make using the telephone for medical care more attractive. Finally, caregivers with limited medical knowledge and experience may use the telephone for simple reassurance and positive reinforcement.

A second significant difference between calls from caregivers of private and nonprivate practice patients in the present study was related to the seriousness of the complaint. This was suggested by the finding that a higher percentage of calls regarding nonprivate practice patients resulted in a referral to the office for an ill visit during regular office hours. This was in contrast to the higher percentage of calls regarding private practice patients who were referred to an ED or urgent care facility, suggesting more serious illness. Reasons for this are likely related to the same factors that prompt a higher use of telephone medicine in general as previously discussed.

The present study also showed differences between private and nonprivate populations in the age of the patient, which has been previously reported. More patients from nonprivate practice were clustered in the younger-than-3-years-old age range and had a lower mean age compared with the that of private practice patients, whose ages were more widely distributed and had a higher mean age. Reasons for this are less clear, although may be related to the same factors as those regarding the increased number of calls and calls for less serious illness previously discussed. It is likely that all these factors would be more pertinent in the younger age range due to perceptions of increased vulnerability of infants and toddlers. It is also possible that the 2 populations of patients are in fact different, with a tendency for private practice patients to be somewhat older. This is not likely based on the limited demographics we have available on the 2 populations. Alternatively, the mean age of the nonprivate practice patient population could be younger because of older, nonprivate patients losing contact with their primary care provider.

Compliance with recommendations for referral and follow-up care was lower than expected in both groups and not significantly different between the 2 groups. Half were not compliant with ED/urgent care referral and one third were not compliant with office visit referral. Several reasons for poor compliance are possible. The apparent degree of illness in children tends to change rapidly, both in response to medications, particularly antipyretics, and to other circumstances such as time of day, mood, and temperament. Children can appear very ill to a parent in the evening at the time of the call, yet be remarkably recovered by the following morning when the office visit is to occur. Parents may sometimes exaggerate the child’s degree of illness prompting an ED referral, perhaps owing to overinterpretation of symptoms and signs (eg, vulnerable child) or expecting a prescription to be called to a pharmacy without a physician evaluation. The high costs of medical care, both emergency and primary, and prescription medications are often seen as prohibitive when no third-party coverage exists. Even with third-party coverage, there are often costs related to health care visits that are not covered by third-party payers, such as missed work, transportation, and sibling child care.

A final possible explanation for the poor compliance with referrals is that caregivers sought care at health care sites other than the site to which they were referred (such as local urgent care facilities or other hospital EDs). This explanation is unlikely for several reasons. First, Cincinnati has only 1 children’s hospital, and it receives the vast majority of pediatric referrals from the metropolitan area. Second, in the geographic area of the practices in the study, there are limited alternative sites available (urgent care facilities); the primary urgent care facility in the geographic area is a satellite of the Children’s Hospital (the records of this satellite were reviewed to document compliance with referrals). Third, of the small number of alternative urgent care facilities in the geographic area, all have excellent systems of feedback to the primary care source (copies of patient encounters are sent to the primary care source). The records from the primary care source were reviewed to capture this information.

CONCLUSIONS

The use of nursing staff using published medical protocols to provide after-hours medical triage and advice is effective and provides high satisfaction to caregivers and physicians. As expected, the triage and advice based on written protocols tend to be slightly more conservative than that of a physician speaking directly with a parent or caregiver, but the advice given is invariably sound. There may be a tendency for higher use of such a service by young, isolated, inexperienced caregivers with limited medical and parenting skills. This should prompt the primary care physician to include education about telephone medicine and use of ED and urgent care facilities as part of the routine
health maintenance visits. Increasing compliance with referrals requires a proactive approach and the establishment of trust among the caregiver, physician, and nurse, which should be developed during repeated visits for routine health maintenance supervision.

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REFERENCES