

Urban Wisconsin Pediatric Patients Using an After-Hours Telephone Triage Service: Outcomes and Compliance

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ABSTRACT

Objective: Evaluate the ability of a telephone triage service (TTS) to assess illness acuity of and patient compliance with advice given.

Design: Retrospective, observational study.

Patients: Patients of an urban, academic, pediatric clinic whose parents or caregivers called the TTS between July 23, 1997 and August 23, 1997.

Outcome Measures: Patient outcomes and visit information at related medical encounters subsequent to a TTS call.

Results: Patients were primarily African-American, under age 5, enrolled in a Medicaid HMO, and most often called for fever, HMO authorization, or asthma. Homecare and PED referrals were the two most frequent dispositions; overall compliance rate was 60%. No patient referred for non-emergent care required care on an urgent or emergent basis.

Conclusions: Initial results suggest that the TTS can effectively evaluate illness acuity in an urban population and compliance with advice is reasonable. A TTS may offer significant benefits to ensure care quality and contain costs in this population.

INTRODUCTION

Inappropriate use of pediatric emergency departments (PEDs) for non-urgent conditions has been well documented.¹ Nurse-operated telephone triage services (TTS) were developed primarily to provide after-hours medical advice for patients or caregivers and to serve as gatekeepers for patients seeking non-urgent care in a PED.² Inappropriate PED use is

associated not only with higher costs and increased likelihood of preventable hospitalizations, but also with decreased care quality related to care discontinuity.^{3,4} By diverting non-urgent visits from the PED to the primary care provider (PCP), TTS have the potential to increase both access to care and care quality while controlling costs. Although recent studies have evaluated both the appropriateness of PED referrals by TTS⁵⁻⁷ and caregiver compliance with advice given by TTS,⁵⁻⁷ and have reported the difference in call and compliance patterns between urban and suburban or private and non-private practice clientele,^{5,8} the authors are unaware of any studies assessing both outcomes of TTS advice and compliance with TTS advice in a high-risk, urban, primarily Medicaid population. The purpose of the present study was to evaluate (1) the ability of a nurse-operated TTS to effectively assess the illness acuity of patients calling into the triage service and (2) to assess patient compliance with the TTS nurse recommendations in an urban Wisconsin population.

METHODS

Telephone Triage Service

A nurse-operated, computerized TTS based on Schmitt's pediatric guidelines⁹ was used for all patients of an urban, academic, pediatric clinic. The TTS, staffed with 20 registered nurse (RN)-licensed nurses with clinical experience ranging from 9 to 27 years, received 16,046 calls in 1997. The service is available for 8 hours daily on weekday evenings and for 16 hours daily on weekends and holidays. Patients or caregivers who call the clinic after hours are automatically forwarded to the TTS, based in a children's hospital. (After hours constitutes these times: Monday through Thursday 8 PM to 1 AM, Friday 5 PM to 1 AM, Saturday noon to midnight, or Sunday 8 AM to midnight.) All calls are forwarded back to the physician on-call for the clinic after the TTS closes. The TTS nurses obtain a history of the present symptoms, document an assessment, select

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Table 1. Recommended disposition for triage calls and patient compliance with recommended triage advice

Initially recommended disposition	Frequency	% of total calls	% of patients complying with disposition [†]
Go to PED immediately	35	20%	77%
Go to PUC	9	5%	67%
Place call to PCP	12	7%	<i>Undetermined (Final disposition unknown)</i>
Authorization for PED visit	28	17%	<i>Not applicable</i>
See PCP within 4 hours	12	7%	67%
See PCP within 24 hours	23	13%	39%
Homecare with follow-up as needed	43	25%	7% did not comply 91% undetermined
Caller aborted process	2	1%	<i>Not applicable</i>
Other	9	5%	Undetermined
TOTAL	173	100%	60% [‡]

[†] Please see the Methods section of this manuscript for a discussion of how compliance was calculated.

[‡] Patients for whom compliance was undetermined or for whom determination of compliance was not applicable were excluded from this calculation.

an appropriate care guideline, determine a disposition, and, where necessary, educate caregivers on homecare treatment.

Patient Sample

All patients, ages birth to 18 years, from an academic, pediatric clinic located in urban Milwaukee who called the clinic after hours between July 23, 1997 and August 23, 1997 for either health care advice or requiring health maintenance organization (HMO) authorization for a PED or pediatric urgent care (PUC) visit were enrolled in this study. Institutional review board approval was obtained.

Data Collection

For all enrolled patients, demographic information, triage call documentation records, information on all visits to PED or PUC clinics operated by a local children's hospital, and information on all PCP clinic visits was obtained during both the 1-month study enrollment period and an additional 1-month follow-up period. Information for PED and PUC visits for patients who only presented directly to the PED or PUC without any contact with the TTS during the study period was excluded.

Data Coding and Analysis

For each patient, all medical encounters were manually evaluated to determine compliance with the recommended TTS disposition. A compliance algorithm was developed that accounted for the recommended disposition, the patient's next known medical encounter, weekday of the call, time of call, and any TTS callbacks that may have occurred. Compliance was coded as 'undetermined' for cases where it was not clear if patients had or had not complied with the TTS recommendations. Of specific note, compliance for patients with a 'homecare' disposition was coded as 'undetermined' unless the patient had a known, subsequent, related medical encounter.

Data were entered into a relational database and descriptive analyses were performed using SPSS. All mean values are reported as mean±SD.

RESULTS

The 123 enrollees generated 173 TTS calls. Patients were primarily African-American (85%), female (55%), less than 5 years of age (61%), and enrolled in Medicaid (75%) — either an HMO (54%) or a fee-for-service (FFS) plan (21%). The average age of patients on August 1, 1997 was 5.2±5.0 years. This demographic profile is consistent with the characteristics of patients seen at the academic, primary-care clinic in this study. The four most frequently used TTS guidelines were 'Fever,' 'HMO Authorization,' 'Asthma,' and 'URI.' The average call, excluding calls for HMO authorization, was 17.4±11.0 minutes long and used 1.3±0.6 triage guidelines. For 75 of the 173 triage calls, patients had known, subsequent, related medical encounters.

The TTS nurses most frequently recommended that callers care for their symptoms at home (43 patients, 25%); 3 (7%) of these patients were considered to have not complied with this advice because of subsequent visits at the PED or PUC (Table 1). The second most frequently used TTS recommendation was immediate referral to the PED; this recommendation had the highest compliance rate (77%). The overall compliance rate with all recommended dispositions was 60%.

The location of related medical encounters subsequent to contact with the TTS are summarized in Table 2. It should be noted that the children's hospital in this study internally triages each patient presenting to its emergency department to either its PED or PUC and, for the purposes of this study, they are considered equivalent. Of the 27 patients advised by a TTS nurse to go the PED and who complied, 3 were admitted. The remaining 24

Table 2. Triage service recommended disposition compared to location of subsequent, related, medical encounter

Recommended triage disposition [†]	Location of subsequent, related, medical encounter				
	PED	PUC	Clinic	Triage Call	TOTAL
Go to PED Immediately	17	10	3	1	31
Go to PUC	1	6	0	0	7
Place Call to PCP	0	1	3	0	4
See PCP within 4 Hours	3	4	3	0	10
See PCP within 24 Hours	2	0	9	1	12
Homecare with Follow-up as Needed	3	0	3	3	9
Other	0	1	0	1	2
TOTAL	26	22	21	6	75

[†]Calls for HMO authorization are excluded from this table

Table 3. Acuity[†] of PED visit for patients with subsequent, related, medical encounters

Recommended triage disposition	PED visit acuity					TOTAL
	1	2	3	4	5	
Go to PED immediately	2	9	3	2	1	17
Go to PUC	1	0	0	0	0	1
See PCP within 4 hours	2	1	0	0	0	3
See PCP within 24 hours	1	1	0	0	0	2
Homecare with follow-up as needed	0	2	1	0	0	3
TOTAL	6	13	4	2	1	26

[†]Acuity ranges from 1 (non-urgent) to 7 (emergent) - please see the Results section for a more complete explanation of this scale. There were no patients with an illness acuity of 6 or higher.

patients were treated in the PED or PUC and discharged home. The 4 patients instructed by a TTS nurse to go to the PED but chose to be seen in an alternate location were discharged home. There were no known, subsequent, related medical encounters for 4 patients instructed to go to the PED immediately. There were 13 patients whose recommended triage advice was other than immediate referral to the PED but who chose to do so regardless, 1 of whom was admitted to the hospital.

The children's hospital PED in this study uses a guideline-driven, observational acuity scale based on the evaluation of signs, symptoms, and illness history by a PED triage nurse. The scale ranges from '1', which are non-urgent visits requiring the least intense level of service, to '7', which are emergent visits requiring the most intense level of service. PED visits of acuity level '1', '2', and '3' can be considered non-urgent in nature, whereas visits of acuity level '4' can be considered urgent, and PED visits of acuity level 5 or above can be considered emergent. Table 3 describes the illness acuity of all subsequent, related PED visits. It is noted that there were only 3

urgent or emergent subsequent, related PED visits, all of whom had been told to go directly to the PED by the TTS nurse.

DISCUSSION

Reflecting the urban location served by the pediatric clinic in this study, the study population was predominantly African-American and covered by Medicaid and its managed care equivalent. Similar to results from previous studies, fever, respiratory symptoms, earaches, and dermatologic problems accounted for the vast majority of TTS advice.²

It is encouraging that, in a population considered to be at-risk for inappropriate use of medical services, non-compliance, and low use of the telephone to seek medical advice,¹⁰ this study demonstrated a 60% overall compliance rate with the recommended TTS disposition — a 75% compliance rate for PED/PUC referrals and a 49% compliance rate for patients directed to see their PCP. As a comparison, Baker et al⁵ reported a 44% compliance rate for PED referrals and a 66% compliance rate for PCP referrals with no difference in compliance rate between private and

non-private practice-based patients. Our compliance rates are lower than those reported by Kempe et al⁷ who reported a 90% compliance rate for urgent referrals. However, differences in results from the present study and those reported by Kempe et al⁷ may be attributable to the higher socioeconomic status of the patient sample.

Two important observations were made in this study. First, all patients with illness acuity ratings reflecting the need for urgent or emergent intervention were referred for emergency care. Second, no patient referred for non-emergent care required care on an urgent or emergent basis. These observations suggest that in an urban population, a TTS staffed with experienced nurses can appropriately identify a patient's illness acuity and that patients will reasonably comply with advice given. While access to triage guidelines similar to the ones used in this study is now available directly to families via the internet,¹¹ outcomes of this approach remain to be studied. An additional notable observation of this study is that of the 43 patients who were advised to treat their symptoms at home, only 3 elected to be seen in the PED. The large portion of PED/PUC visits likely prevented by the existence of the TTS is encouraging.

Reasons for inappropriately seeking non-urgent care in a PED are complex, combining elements of culture, socioeconomic status, self-perceptions of urgency as well as characteristics of the health care delivery system. It has been previously shown that gatekeeping may, in the short term, reduce inappropriate PED use but may not necessarily change the long-term health care-seeking behavior of patients in a Medicaid population.¹² Efforts to provide these patients with easier, more convenient access to a PCP and medical home as well as access to reliable, after-hours medical advice, such as a TTS, may be more successful in reducing inappropriate PED use. Further study is needed to evaluate the effectiveness of TTS homecare advice as well as the effectiveness of TTS in both reducing inappropriate PED use and increasing the continuity and quality of care in a larger population.

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