

# Compliance With Emergency Department Patient Referral

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This study evaluated the nature and efficacy of compliance with emergency department (ED) patient referral recommendations. This was a prospective, nonrandomized, descriptive analysis of all ED patients referred mandatorily to an established urban hospital follow-up network. Compliance was measured by analysis of hospital records determined as appointment completion. Patient demographics, urgency of complaint, hospital relationship (new versus established), diagnosis (International Classification of Diseases-9CM), specialty, and method of payment, defined as clinic or private referral, were determined. Comparisons between groups used Fisher's exact test and  $\chi^2$  analysis ( $\alpha = 0.05$ ). There were 2,185 patients encountered with 1,443 (66%) discharged for referral, and an overall compliance rate of 27.8% (401 patients). Patients had a mean age of 36.9 years; 50.6% were male, 94.4% were established patients, 51.1% were clinic cases, and 96.7% had nonurgent complaints. Patients encountered had higher rates of compliance if female (33.9%), greater than 40 years of age (43.4%), with urgent complaints (46.8%), and if referred to private physicians (37.0%) ( $P < .001$ ). Compliance also correlated with the diagnosis of fracture (63.3%) or laceration (45.6%); and specialty referral to obstetrics-gynecology (28.4%) and general surgery (22.4%) consultants ( $P < .01$ ). Most patients demonstrate low compliance (28%) with follow-up recommendations, even with a directed ED referral system. (Am J Emerg Med 1992;10:413-417. Copyright © 1992 by W.B. Saunders Company)

Ideally, every emergency department (ED) patient encounter should have a health care referral source available, as an integral part of the diagnostic and therapeutic plan. Becker suggested that the success of outpatient therapy is dependent on recognition of ill health, diagnosis of illness, planning of therapy, and compliance or adherence to the plan.<sup>1</sup> However, the issue of patient compliance with referral recommendations is frequently encountered in the ED setting and has yet to be addressed in a rigorous fashion.

The significance of both acute and routine health care delivered through the ED is well described. Fully 66% of patients presenting to the ED for emergent complaints, do so without personal physician contact.<sup>2</sup> The ED serves many functions such as a trauma treatment center, private physician substitute, and "family physician" to the urban poor.<sup>1</sup>

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Ullman and colleagues characterized a representative sample of 50,000 visits to conclude that most patients (73.7%) used the ED infrequently (one visit annually).<sup>3</sup> High-frequency ED users were the minority inner-city low-income group that had fewer accidents (48%); but were routinely more severely affected with an increased rate of hospitalization (58%).<sup>3</sup>

Shortliffe et al first cited the importance of the ED, noting a 400% increase in ED visits from 1944 to 1955.<sup>4</sup> He cautioned that the ED was "the weakest link" in the hospital care chain.<sup>5</sup> Thus, ED patients' compliance with therapeutic regimens is identified as a significant issue in analysis of this mode of health care delivery.

The issue of patient compliance was first noted by Hippocrates, who suggested that "[the physician] should keep aware of the fact that patients often lie when they state that they have taken certain medications."<sup>6</sup> Compliance is defined as patient behavior in terms of taking medication, following diet, or executing lifestyle changes coincident with the clinical presumption.<sup>7</sup>

There have been approximately 300 articles published before 1974, with over half featuring original data concerning patient compliance.<sup>8</sup> However this research is based on analysis of specific patient groups such as the psychiatric population or those limited to a particular therapeutic modality or intervention, and is found predominately in the administrative medicine literature.<sup>9</sup> The goal of the study was to evaluate the nature and efficacy of ED patient referral recommendations, measured as completion of appointment, along with characterization of demographics.

## METHODS

This study was a prospective, nonrandomized descriptive analysis. The population consisted of all patients presenting consecutively to the ED over an established time interval, a 30-day period in September 1989. Patients enrolled included those discharged with referral to an established follow-up network and excluded those admitted for inpatient medical care. The system used was a University of Pittsburgh Emergency Medicine Residency Affiliate, the Western Pennsylvania Hospital, with 568 beds and 28,000 annual visits in an urban locale.

The intervention for discharged patients included written mandatory referral to private physicians or outpatient clinics. Patients were given location, including address and phone, but were responsible for appointment scheduling. Compliance was measured as completion of the designated referral appointment for each outpatient within a 30-day period. This information was assessed by internal review of the medical records of each health care resource used. There

**TABLE 1.** Compliance

	n	%
Patients Evaluated	2,185	
Admitted	742	34.0
Discharged	1,443	66.0
Patients Enrolled	1,443	
Compliant	401	27.8
Noncompliant	1,042	72.2

was no control established for patients' choice to use other health care sources.

Data collection included patient demographics; specifically age—pediatric (0-12 years), young adult (12-40 years), and older adults (over 40 years); sex; complaint categorization as urgent or routine, assigned by triage nurse based on cardiorespiratory instability; system familiarity—new or old patient based on a 1-year association with the hospital; method of payment, or insurance coverage indicating private or clinic referral; diagnosis using International Classification of Diseases-9CM for classification; and medical specialty referral. Comparisons between groups were determined as a proportion of the total, and used Fisher's exact test and  $\chi^2$  analysis with ( $\alpha = .05$ ).

## RESULTS

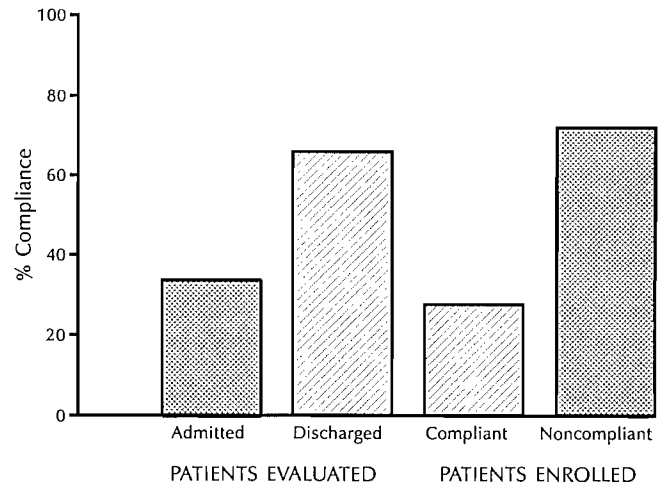
There were 2,185 patients encountered during this study period with 34.0% admitted, and 1,443 (66.0%) discharged for follow-up (Table 1 and Figure 1). Their mean age was 36.9 years with a range of 5 days to 93 years.

A higher likelihood of compliance was found in older, female, private patients with urgent complaints, such as fracture or lacerations, or those referred to obstetrics/gynecology, surgery, and orthopedic clinics. The highest rates of follow-up were found in urology (66.6%) and plastic surgery (57.1%) clinics, but comprised a relatively small proportion of total referrals, and did not attain statistical significance (Tables 2 through 5 and Figures 2 through 5). A lower likelihood of compliance was found in young, male, clinic patients with nonurgent complaints such as viral syndrome or urinary tract infection or those referred to dermatology, otolaryngology, suture, ophthalmology, or ED facilities (Tables 2 through 5 and Figures 2 through 5). There was no significant difference found between new patients or those familiar with the health care system.

**TABLE 2.** Patient Demographics

	Total (n = 1,443)		Compliant		Noncompliant	
	n	(%)	n	(%)	n	(%)
Age						
Pediatric	357	24.7	57	16.0	300	84.0
Young adult	715	49.5	183	25.6	532	74.4
Older adult*	371	25.7	161	43.4	210	56.6
Sex						
Male	730	50.6	159	21.8	571	78.2
Female*	713	49.4	242	33.9	471	66.1

\*  $P < .001$ .

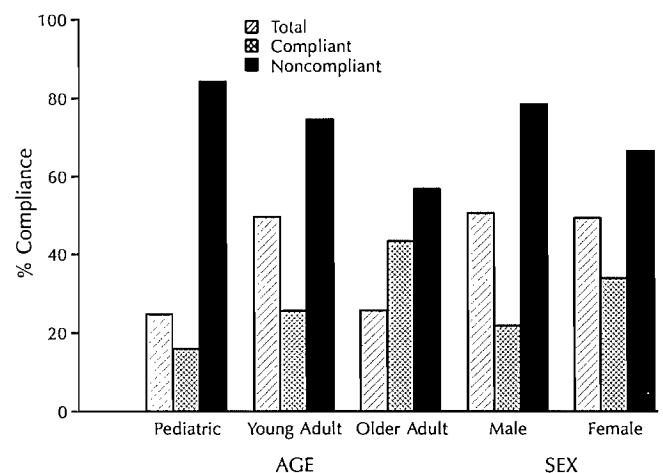
**FIGURE 1.** Patient compliance.

## DISCUSSION

Analysis of patient compliance with ED referral recommendations begins with examination of the demographics specific to this model, in an attempt to determine whether extrapolation to other hospital situations is warranted. Torrens has suggested that there is "no single model to describe the Emergency Room," illustrating the limitations of generalizing specific study results to other facilities.<sup>10</sup>

The most significant differential point in regard to such generalization involves the distinction between patient populations using the inner-city versus the suburban hospital systems. The urban facility is primarily used by the poor, minimally educated patient with no other health care resources; it has in fact been called "the family physician for the poor."<sup>10,11</sup> The suburban hospital mainly serves the upper socioeconomic groups who have advanced education and more often access to multiple health care resources.<sup>10,11</sup> Thus, for separate reasons the rate of follow-up or compliance for each group may be decreased. Our model sampled a reasonable patient mixture with a city location but a large suburban community referral network.

The patient admission ratio may provide some information

**FIGURE 2.** Patient demographics.

**TABLE 3.** Urgency, Familiarity, Payment

	Total (n = 1,443)		Compliant		Noncompliant	
	n	(%)	n	(%)	n	(%)
<b>Urgency</b>						
Urgent	730	50.6	159	21.8	571	78.2
Nonurgent*	713	49.4	242	33.9	471	66.1
<b>Health system familiarity†</b>						
New patient	81	5.6	24	29.6	57	70.4
Familiar patient	1,362	94.4	390	28.6	972	71.4
<b>Method of Payment</b>						
Clinic	738	51.1	140	19.0	598	81.0
Private‡	705	48.9	261	37.0	444	63.0

\* P < .01.  
 † P > .05.  
 ‡ P < .001.

concerning acuity of a particular hospital. The usual admission rate is between 12.5% and 16.2% with a range of 4.1% to 49% depending on facility.<sup>4,9,12</sup> Our study found a 33% admission rate with 66% of patients discharged for outpatient management, suggesting a higher acuity level.

Patients encountered were predominantly young adults, with 49.6% in the 12- to 40-year age range. The highest compliance was found in older patients, and least in the pediatric age group. This finding of young adults comprising the largest proportion of total ED patients (47.6% to 63.7%) has been suggested in previous studies.<sup>9,10</sup> Most studies (29 of 36, 80.6%) compiled did not reveal a correlation of compliance with age, as was demonstrated here. However, a single study suggested that at age extremes patients were more compliant.<sup>13</sup> This may be a function of the self-limited nature of pediatric versus adult illness.

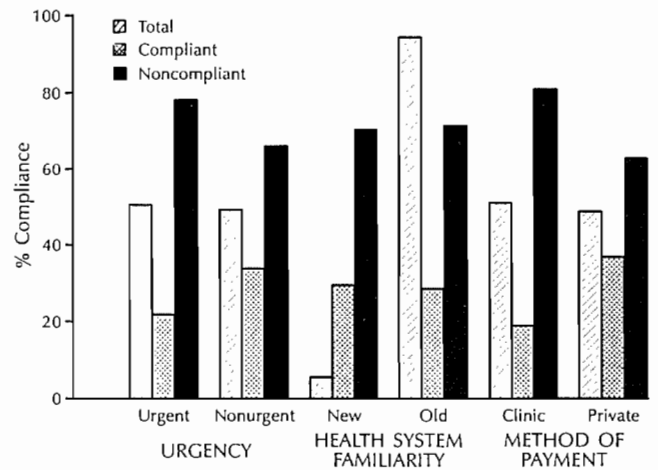
Most EDs encounter an equal proportion of male and female patients with roughly equivalent compliance rates.<sup>10,14</sup> There was a consistently higher compliance rate in female subjects, suggesting educational programs perhaps be directed at the male population. Interestingly, "old" patients that had used the specific hospital resources previously were not more likely to be compliant, compared with those presenting for their first ED visit. This contrasts with a prior study suggesting patients that had used the system previously were more likely to be compliant (44% versus 26%).<sup>13</sup> This may suggest a decreased significance of the established clinic-patient relationship on an institutional level.

However, on an individual basis patients with a private

**TABLE 4.** Diagnosis

Diagnosis	Total (n = 420)		Compliant		Noncompliant	
	n	(%)	n	(%)	n	(%)
Contusion/Sprain	92	21.9	18	19.6	74	80.4
*Lacerations	68	16.2	31	45.6	37	54.4
Bronchitis	56	13.3	11	19.6	45	80.4
Urinary tract infection	33	7.9	2	6.1	31	93.9
Gastroenteritis	33	7.9	7	21.2	26	78.8
Viral syndrome	33	7.9	3	9.1	30	90.9
*Fracture	30	7.1	19	63.3	11	36.7
Pharyngitis	30	7.1	6	20.0	24	80.0
Otitis media	24	5.7	8	33.3	16	66.7
Pelvic inflammatory disease	21	5.0	5	23.8	16	76.2

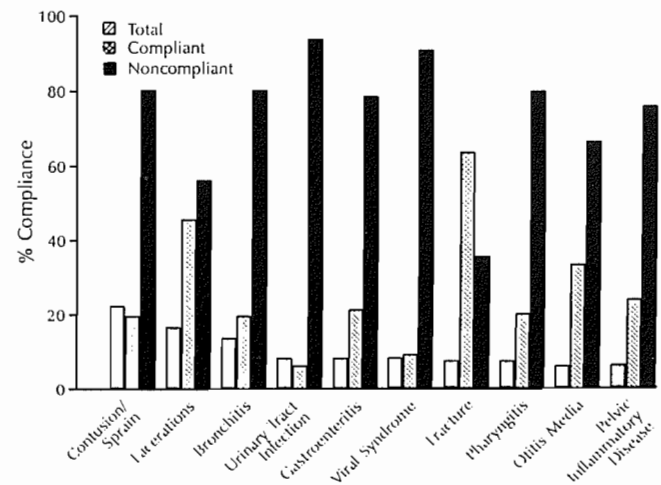
\* P < .001.



**FIGURE 3.** Urgency, familiarity, and payment versus compliance.

physician are almost twice as likely to complete referral appointments compared with clinic patients. The clinic population accounted for approximately 50% of patients encountered in this study, with a suggested range of 40% to 61% encountered in other EDs.<sup>15,16</sup> This is significant in that this population results in a disproportionate number of total ED visits (58.5%) as the result of the tendency for uninsured poor to use the ED for all health care needs.<sup>3</sup> Therefore, the target population for educational efforts should be the clinic patient (19% compliance) lacking other health care resources, while the private patient fares slightly better (37% compliance).

Although infrequently encountered in this study, patients with urgent medical conditions (3.3%), indicated by cardio-respiratory instability, were 1.5 times as likely to be compliant than those with nonurgent conditions. These results are comparable to a study by Roth finding a distribution of 89.2% nonurgent, 6.2% borderline, and 4.6% urgent patient complaints.<sup>17</sup> This means of classification is difficult with significant discrepancy between physicians underestimating and patients overestimating the severity of illness.<sup>9,18</sup> Few



**FIGURE 4.** Diagnosis versus compliance.

TABLE 5. Speciality Referral

Specialty referral	Total (n = 735)		Compliant		Noncompliant	
	n	(%)	n	(%)	n	(%)
Specialty referral						
Medical	234	31.8	39	16.7	195	83.3
Pediatrics	188	25.6	30	16.0	158	84.0
*Obstetrics/gynecology	95	12.9	27	28.4	68	71.6
*Orthopedics	91	12.3	20	21.2	71	78.0
*Surgery	72	9.8	16	22.2	56	77.8
Otolaryngology	19	2.6	0	0	19	100
Dermatology	12	1.6	0	0	12	100
Emergency	7	1.0	0	0	7	100
Plastic surgery	7	1.0	4	57.1	3	42.9
Dental	5	0.7	1	20.0	4	80.0
Urology	3	0.4	2	66.7	1	33.3
Ophthalmology	2	0.3	0	0	2	100

\*  $P < .01$ .

studies (one of nine, 11%) found correlation between disease severity and subsequent compliance. However, if the patient perceived their health status as poor (41% versus 15%) and follow-up was deemed necessary by the physician (39% versus 25%), then compliance was increased.<sup>13</sup>

Analysis of patient complaint indexed by discharge diagnosis found the highest compliance for the surgical conditions of fracture (63.3%) and laceration (45.6%) and the medical condition of otitis media (33.3%). Comparative studies have suggested lumbar pain (37.4%), traumatic injury (34.2%), and urinary tract infection (24.5%) as the most common ED presenting complaint, with 34% to 58% referral compliance.<sup>10,14</sup> The pertinent issue is the less than complete follow-up for the seemingly mandatory referral complaints of fractures and lacerations. It is obvious that patients probably used other health care resources for their care ultimately.

The highest absolute compliance rates were for specialty referral to urology (66.6%) and plastic surgery (57.1%) clinics; but were not significant because of the small incidence, 0.4% and 0.9% respectively. Thus, overall compliance was highest for obstetrics/gynecology (28.4%), general surgery (22.2%), and orthopedics (22.0%) clinics. However, most private patients were actually referred to medical (31.7%) and pediatric (25.5%) clinics. This compares with a 1954 study from Hartford Hospital (Hartford, CT), with referral predominantly to surgical (45%), medical (22%), and orthopedic (21%) consultants.<sup>4</sup> This change may reflect the evolution from primary care medical resources toward subspecialty consultants. However, educational efforts should be targeted at referral to primary care facilities, encountering most patients, who tend to be noncompliant. Lastly, the ED revisit rate was 0.92% compared with a range of 0.39% to 3.4% described previously.<sup>19,20</sup> The ED may be used for limited follow-up, based on a mutual plan for scheduled return.

The issue of patient noncompliance is complex. Haynes has suggested an interaction of over 200 variables including situational variation, nature of illness, treatment regimen, demographic characteristics, and relationship between the patient and health care provider.<sup>8</sup>

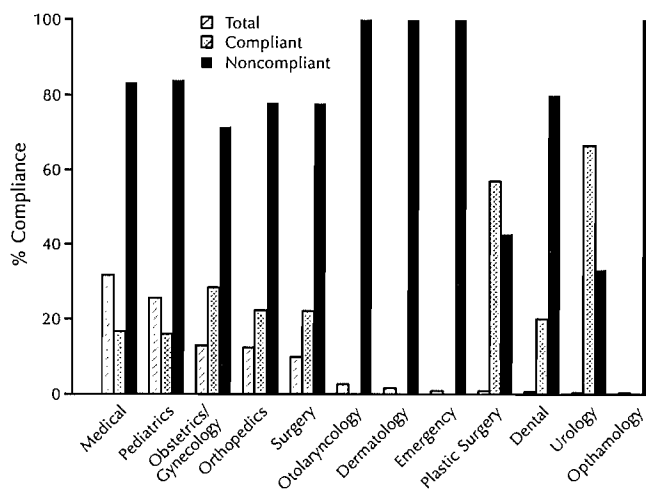


FIGURE 5. Specialty referral versus compliance.

Various studies have examined patient compliance related to psychiatric dysfunction (33.3% to 59%), medication regimens (32% to 46%), behavioral modification, and specific medical conditions, such as cardiac disease (17%).<sup>17,20,21-23</sup> Collected series reveal that compliance for all medical intervention regimens have a mean response of 48.2% (range, 4% to 92%).<sup>7,24</sup> This study demonstrated a mean compliance rate of 27.8% of ED patients for referral recommendations.

Further analysis of reasons for noncompliance can be clarified by several assumptions. Sacket suggests that compliance may be related to patient confidence, which is improved if the diagnosis is correct, therapy is appropriate, and the patient is informed of expectations for health care.<sup>7</sup> Assuming these conditions are met, noncompliance is both a cause and effect of mutual general dissatisfaction with the health care system, as patients engage in multiple ED visits for the same medical problem, thus neutralizing the benefits of modern medical care and resulting in unnecessary duplication of services.<sup>1</sup>

This study was a prospective study of one of the largest groups (1,443) used for this type of evaluation. Prior evaluations were based on smaller patient groups (50 to 800) in the psychiatric or administrative literature, done in retrospective questionnaire fashion.<sup>25-27</sup> This methodology requires active input from the patient. There may be a selection bias suggesting that those noncompliant patients would similarly not respond to the questionnaire means of assessment. This bias is avoided by institutional compilation of appointment completion, which does not require active patient input.

However, this assessment strategy does not yield insight into the patients' rationale for noncompliance. Another study design limitation includes a mandatory referral strategy, which doesn't control for normal disease resolution. Jellinek cited rationale for noncompliant psychiatric patients to include: the majority stating no reason (34%), followed by "a change of mind" since visit (31%), disagreement with referral (15%), cost (10%), and still considering follow-up (10%).<sup>28</sup> Surprisingly, some studies suggest problems with the availability of child care, transportation, and cost as the major difficulties with appointment completion, as opposed to lack of understanding (31%) or denial of disease.<sup>27,29</sup>

Interventions to improve compliance should target non-compliant patients with severe illness, as opposed to the compliant patient with minor illness, to achieve the most benefit. This intervention may involve definitive ED diagnosis and therapy. This negates the patients' need to comply, but is not cost effective nor always feasible. The second option is to use directed patient referral techniques.

The first technique involves the use of written discharge instructions. The discharge instruction is an integral part of the medical record—as “mandated” or “as needed” follow-up recommendations.<sup>30</sup> They should be easily understood, with specific information in regard to diagnosis, culture, x-ray results, and “closed loop” return to the ED if the referral resource is not available.<sup>30</sup> However, a study suggested that reading difficulties were prevalent, with 20% of patients illiterate and 40% only competent to an eighth-grade level.<sup>31</sup>

Many studies have examined the effects of various interventional modalities to increase patient compliance. Jones used a Human Behavioral Modification model where a combination of motivational techniques, education, and telephone contact resulted in an increase in completed appointments from 24% to 68%.<sup>27</sup> Strauss and coworkers found that if the appointment was made for the patient at the time of discharge compliance increased from 28.4% to 70%.<sup>13</sup> Finally, Silverman found that if a contact was made with the patients private or on-call physician the compliance improved from 59% to 79%.<sup>32</sup>

Lastly, physicians are poor predictors of which patients would be compliant, with only 35% of those noncompliant predicted, usually alcoholic or dissatisfied patients.<sup>33</sup> There was no difference associated with level of training, where interns (79%), residents (77%), and attending physicians had similar predictive ability.<sup>33</sup> Thus, all discharged patients should have compliance emphasized in a rigorous fashion.<sup>33</sup>

## CONCLUSION

Patients demonstrate low compliance (28%) with ED referral recommendations, measured as appointment completion; even in a mandatory well-directed system.

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