

Physician Assessment of Appropriate Healthcare Level Among Nonurgent Patients

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At the emergency department (ED), some patients are perceived as having inappropriate symptoms for the setting and as being more suitable for medical attention in primary care (PC).¹⁻⁴ Assessment of patient urgency has been found to differ among medical disciplines irrespective of patient condition, even when the same criteria of urgency and appropriateness are applied.⁵⁻⁸ Assessment is also found to change with physician experience.⁹ Moreover, many patients perceive their symptoms as being more urgent than does the physician.^{1,10} This discrepancy has been found to be stable over the past decades, despite large constraints in hospital ED services and expansion of PC.^{11,12} These organizational changes have led to overcrowding at EDs worldwide, but it is unclear whether and how this may have influenced physician perception of appropriate level of care among patients in PC and at the ED.^{13,14} To our knowledge, such an investigation has not previously been reported.

The specific aims of our study were (1) to analyze physician assessment of urgency and appropriate level of care among nonurgent patients attending the ED and among unscheduled patients presenting in PC, (2) to explore the sociodemographic characteristics of patients assessed by the physician as inappropriately presenting at the ED, and (3) to examine whether physician age, sex, discipline, or clinical experience influenced assessment of appropriate care level.

Among other factors, these aspects might influence workflow at an ED.¹⁵ Knowledge about physician perception and about patient behavior at different levels of emergency care is important to consider when managing and optimizing ED organization, medical education, and public information.

Objectives: To analyze the appropriateness of healthcare level chosen by nonurgent patients in an emergency department (ED) compared with unscheduled primary care (PC) patients and the factors influencing physician consideration of appropriate care level.

Study Design: Cross-sectional study.

Methods: This study used structured face-to-face interviews with nonurgent patients at an urban ED and with unscheduled PC patients from a defined catchment area, concomitant with a questionnaire to the treating physician.

Results: General practitioners considered to a higher extent than their ED colleagues that patients chose an appropriate level of care. General practitioners were older and had longer clinical experience than physicians at the ED. Patients considered at an appropriate care level were distinguished by their symptom presentation, shorter duration of symptoms, and more regular previous healthcare use. Men with little regular previous healthcare use were more likely to present with symptoms assessed as inappropriate for the ED ($P < .001$).

Conclusions: Patients with disorders that ED physicians considered inappropriate for the setting had little regular previous healthcare use but were also managed by less experienced physicians compared with patients in PC. General practitioners agreed with the choice of healthcare level among their patients to a large extent. It is important to meet patient demands and concerns in a professional way and to develop organizational ways to manage patient needs that are suitable for the setting.

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METHODS © Managed Care & Healthcare Communications, LLC

We conducted a cross-sectional interview-based study among patients from a defined catchment area, together with a concomitant questionnaire addressed to the treating physician. An overview of the study design

is shown in the **Figure**. The methods concerning the patient interview have been presented in detail elsewhere.¹⁶

Setting

Healthcare delivery in Sweden is organized by county councils, and all

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Take-Away Points

Information concerning appropriate use of urgent healthcare should be directed to healthy populations that inappropriately seek care in the emergency department (ED). Closer collaboration between primary care (PC) and EDs should be encouraged for sustainable development.

- In particular, men with little regular previous healthcare use were assessed as having symptoms inappropriate for the ED.
- Compared with ED physicians, general practitioners were older, had longer experience, and agreed with the choice of healthcare level among their patients to a greater extent.
- In this setting, the ED was staffed by less experienced physicians compared with PC. The clinical effect of this is unknown.

patients 15 years and older. During the study period, physicians from internal medicine, cardiology, surgery, emergency medicine, and orthopedics were on call at the ED around the clock. Forty PC centers are located within the same catchment area and are open during office hours. All PC centers are responsible for performing a medical examination of any patient in the catchment area the

day he or she presents with an urgent complaint. A patient with an urgent symptom occurring during regular office hours is expected to contact the PC center but may also attend a hospital ED without a referral.

residents are covered by the national health insurance system, primarily financed by taxes. All physicians receive a monthly salary and are not compensated for the number of patients they see. Primary care is provided at healthcare centers, each serving the population of a defined geographic catchment area. In the capital of Sweden, the county of Stockholm, there are about 200 PC centers and 5 hospitals with EDs open 24 hours, serving 1.9 million inhabitants.

The patient copayments at the time of the study were US \$20 in PC and US \$38 at the ED. An ED visit was free of charge if the patient was referred from PC. There was also a high-cost ceiling unrelated to patient income. A patient who had paid a total of US \$160 in patient fees was entitled to a “free care card” (ie, free medical care for the rest of the 12-month period, calculated from the date of the first consultation).

The study was performed in the catchment area of Stockholm Söder Hospital. The hospital is a public general hospital with a catchment population of about 500,000 and 505 beds. The ED of this hospital has a mean of 90,000 visits per year by

■ **Figure.** Assessment of Nonurgent Visits in the Study

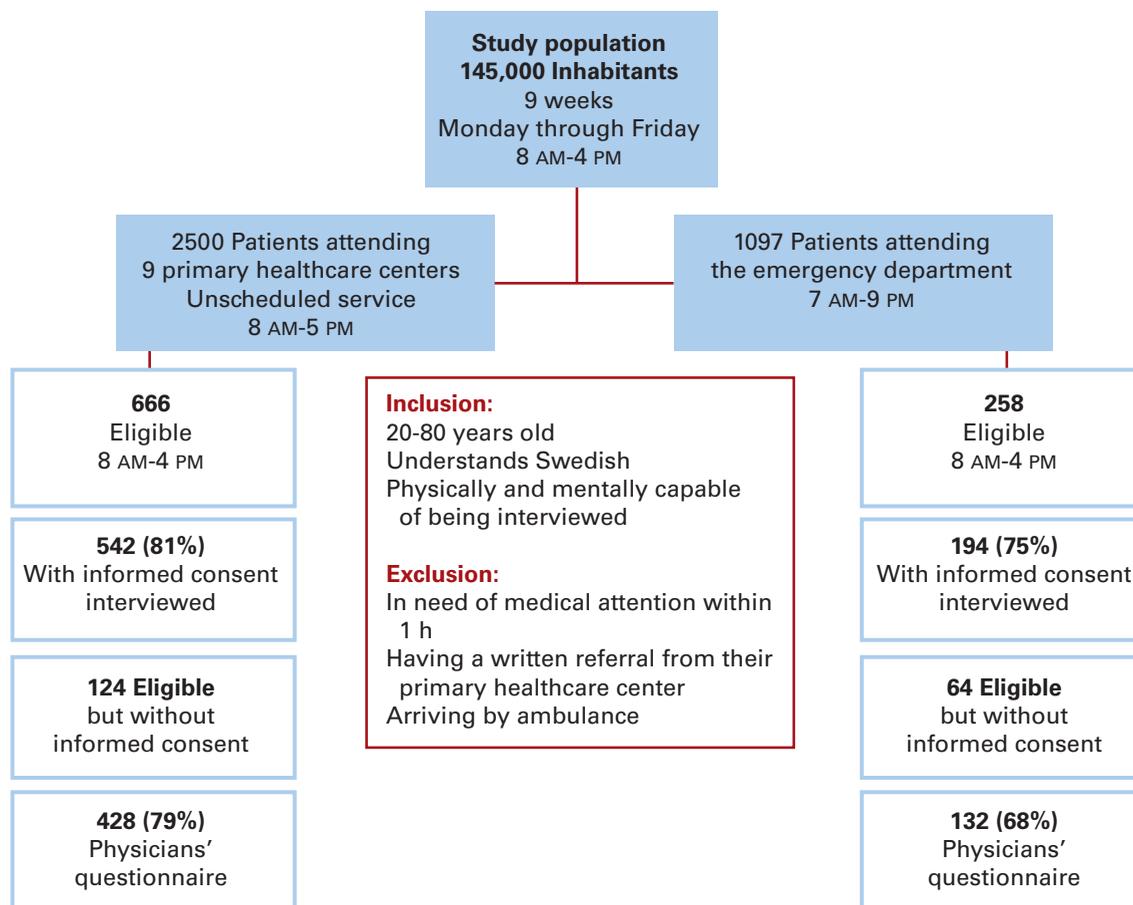


Table 1. Physician Assessment of Nonurgent Visits^a

Question to the Physician	No. (%)		P ^b
	Primary Care (n = 428)	Emergency Department (n = 132)	
How long could the patient have waited without exposing himself or herself to unnecessary medical risk?			
≤24 h	107 (25.3)	60 (46.2)	
>24 h	316 (74.7)	70 (53.8)	<.001
What do you consider the most appropriate healthcare level for the patient's condition in general?			
Primary care or self-care	414 (97.2)	69 (52.7)	
Emergency department or specialist	12 (2.8)	62 (47.3)	<.001
What would be the most appropriate healthcare level under current circumstances for this patient?			
Primary care or own treatment	403 (98.3)	65 (50.0)	
Emergency department or specialist	7 (1.7)	65 (50.0)	<.001

^aMissing values were excluded from the analysis.
^bPearson χ^2 test.

Selection of Participants

PC Centers. The 40 PC centers in the catchment area of Stockholm Söder Hospital were randomly approached one by one. The first 9 centers that agreed to participate were included in the study, each with a catchment area of more than 9000 inhabitants, creating a study population of approximately 100,000 inhabitants representing urban and rural areas. Four centers refused participation because of reorganization or lack of interview space.

Patient Inclusion Criteria. Inclusion criteria for patients were the same at the PC and ED sites. Only inhabitants in the catchment areas of the 9 PC centers were eligible for inclusion in the study. Eligible patients had to have contacted 1 of the 9 PC centers within the preceding 24 hours or had to have gone directly to the ED without written referral from a general practitioner in the catchment area. Other criteria for inclusion were age between 20 and 80 years, ability to understand Swedish, physical and mental capability of being interviewed, and absence of dementia or influence of alcohol or drugs. Patients had to be able to wait for physician evaluation for at least 1 hour without medical risk (ie, triage level 4) and had to have arrived at the healthcare facility by their own transportation. Triage was performed before study inclusion by ordinary personnel at the different sites. The inclusion criteria were set to identify the population with the lowest level of medical risk. Informed verbal consent was obtained from each participant.

Physician Inclusion Criterion. The physician who examined the patient was requested to complete a questionnaire after the consultation. Physicians included consultants and residents.

Data Collection

Structured Interview of Patients. Nineteen interviewers were recruited and trained by the research team. The patient interview was conducted just before examination by the physician. The interviews were performed during a 9-week period from March to May 2002, Monday through Friday, between 8 AM and 4 PM, at the ED of Stockholm Söder Hospital and at the 9 PC centers. The structured interview comprised 80 items concerning patient demographics, duration of symptoms, perception of symptoms as indicated by being anxious or troubled, and healthcare experiences.

Physician Questionnaire. After examining the patient, the physician was requested to complete a self-administered questionnaire assessing the suitability of the level of care chosen by the patient and the medical risk of any delay before examination. The specific items are listed in Table 1. The physician was also asked for information about sex, age, professional experience, and affiliation.

Data Analysis

Patient and physician questionnaires were linked by a unique identification number. Descriptive analyses of patient characteristics (age, sex, country of birth, marital status with children, education level, regular monitoring of chronic disease, regular medication status, receipt of a free care card, previous hospitalization, and perception of symptoms as indicated by being anxious or troubled [measured by the visual analog scale])¹⁷ were obtained, along with physician characteristics and assessments. Subsequently, a detailed analysis of ED patients was performed. Each potential predictor

■ **Table 2.** Patient Characteristics in Assessment of Nonurgent Visits^a

Characteristic	No. (%)		P ^b
	Primary Care (n = 428)	Emergency Department (n = 132)	
Sex			
Male	158 (36.9)	68 (51.5)	
Female	268 (62.6)	63 (47.7)	
Missing	2 (0.5)	1 (0.8)	<.01
Age, y			
20-34	9 (21.3)	25 (18.9)	
35-49	135 (31.5)	41 (31.1)	
50-64	102 (24.0)	38 (28.8)	
65-80	97 (22.7)	27 (20.6)	.69
Country of birth			
Sweden	366 (85.5)	113 (85.6)	
Nordic	23 (5.4)	6 (4.5)	
Europe	20 (4.7)	6 (4.5)	
Other	16 (3.7)	6 (4.5)	
Missing	3 (0.7)	1 (0.8)	>.99
Married or cohabiting			
Yes	289 (67.5)	80 (60.6)	
No	135 (31.5)	51 (38.6)	
Missing	4 (0.9)	1 (0.8)	.46
Children			
Yes	315 (73.6)	88 (66.7)	
No	109 (25.5)	43 (32.6)	
Missing	3 (0.7)	1 (0.8)	
Does not want to answer	1 (0.2)	0	.41
Highest completed education			
Compulsory school	66 (15.4)	18 (13.6)	
Secondary school or high school	193 (45.1)	71 (53.8)	
University	163 (38.1)	41 (31.1)	
Education not specified	3 (0.7)	1 (0.8)	
Missing	3 (0.7)	1 (0.8)	.52
Employment status			
Employed ≥75%	266 (62.1)	81 (61.4)	
Employed 25%-74%	14 (3.3)	6 (4.5)	
Employed <25%	9 (2.1)	3 (2.3)	
Disability compensation	36 (8.4)	16 (12.1)	
Retired	99 (23.1)	25 (18.9)	
Missing	4 (0.9)	1 (0.8)	.72

(Continued)

of being considered appropriate or inappropriate in the setting was first assessed in univariate models (χ^2 test for categorical variables and *t* test for continuous variables), expressed as odds ratio (OR) and 95% confidence interval (CI). *P* <.05 was considered significant. Univariate predictors, including a composite variable of regular previous healthcare use (regular monitoring of chronic disease, regular medication status, previous hospitalization, and receipt of a free care card [eAppendix A available at www.ajmc.com]), were subsequently assessed in a stepwise multivariate logistic regression model to determine their independent effect. An interaction analysis was also performed. Data were entered into EpiData 4.0 (EpiData Association, Odense, Denmark). Descriptive and univariate analyses were performed in STATISTICA release 7 (StatSoft, Inc, Tulsa, OK). Multivariate analyses were conducted using SAS (SAS Inc, Cary, NC).

A total of 736 of 924 patients (80%) gave informed consent to follow-up and provided their na-

tional identification number (Figure). Physician questionnaires were completed for 560 patients (76%), 428 (79%) at PC centers and 132 (68%) at the ED. The study received approval by the regional research ethics committee at Karolinska Institutet, Stockholm, Sweden (Dnr: 442/01).

RESULTS

Patient Characteristics

At PC centers, the proportion of male patients was 37% compared with 52% at the ED ($P < .01$) (Table 2). No differences were found between PC and ED patients regarding age, country of birth, marital status with children, education level, or employment status. A larger proportion of ED patients underwent previous hospitalization (35% vs 21%, $P < .001$), had a free care card (34% vs 25%, $P < .04$), were more anxious (55% vs 37%, $P < .001$), and had symptom duration of 24 hours or less (42% vs 20%, $P < .001$). The ED and PC patients received regular monitoring of chronic disease and took regular medication to the same extent.

Table 2. Patient Characteristics in Assessment of Nonurgent Visits^a (Continued)

Characteristic	No. (%)		P ^b
	Primary Care (n = 428)	Emergency Department (n = 132)	
Regular monitoring of chronic disease			
Yes	156 (36.4)	58 (43.9)	
No	272 (63.6)	73 (55.3)	
Do not know	0	1 (0.8)	.11
Regular medication			
Yes	186 (43.5)	56 (42.4)	
No	240 (56.1)	76 (57.6)	
Do not know	1 (0.2)	0	
Missing	1 (0.2)	0	.78
Hospital admission within the past 2 y			
Yes	89 (20.8)	46 (34.8)	
No	338 (79.0)	86 (65.2)	<.001
Free care card			
Yes	107 (25.0)	45 (34.1)	
No	320 (74.8)	87 (65.9)	
Missing	1 (0.2)	0	.04
Symptoms and signs at presentation			
Respiratory	197 (46.0)	7 (5.3)	
Circulatory	12 (2.8)	20 (15.2)	
Digestive	23 (5.4)	31 (23.5)	
Genitourinary	36 (8.4)	7 (5.3)	
Skin	33 (7.7)	1 (0.8)	
Musculoskeletal	55 (12.9)	28 (21.2)	
Trauma	22 (5.1)	23 (17.4)	
Miscellaneous	50 (11.7)	15 (11.4)	<.001
Anxious^c			
A little	271 (63.3)	60 (45.5)	
A lot	157 (36.7)	72 (54.5)	<.001
Troubled^c			
A little	127 (29.7)	30 (22.7)	
A lot	301 (70.3)	102 (77.3)	.12
Duration of symptoms, h			
≤24 h	86 (20.1)	55 (41.7)	
>24 h	342 (79.9)	77 (58.3)	<.001

^aMissing values were excluded from the analysis.

^bPearson χ^2 test.

^cAs measured by the visual analog scale¹⁷ score (1-5 is a little; 6-10 is a lot).

Table 3. Physician Characteristics in Assessment of Nonurgent Visits^a

Characteristic	Primary Care (n = 428)	Emergency Department (n = 132)	<i>P</i> ^b
Sex, No. (%)			
Male	192 (44.9)	93 (70.5)	
Female	230 (53.7)	39 (29.5)	<.001
Age, y			
Mean	47	36	
Median (interquartile range)	50 (42-53)	36 (31-40)	<.001
Experience, No. (%)			
Internship	34 (7.9)	19 (14.4)	
Resident	62 (14.5)	76 (57.6)	
Consultant	322 (75.2)	35 (26.5)	<.001
Affiliation, No. (%)			
Emergency medicine	4 (0.9)	32 (24.2)	
General practitioner	412 (96.3)	2 (1.5)	
Internal medicine or cardiology	1 (0.2)	49 (37.1)	
Surgery or orthopedics	1 (0.2)	47 (35.6)	<.001

^aMissing values were excluded from the analysis.
^bPearson χ^2 test.

Physician Characteristics

At PC centers, the proportions of male and female physicians were similar, whereas there was a predominance of male physicians (71%) at the ED (Table 3). General practitioners were older than ED physicians (median age, 50 vs 36 years) and were more experienced, with 75% being consultants compared with 27% at the ED.

Physician Assessment

In Table 1, the specific questions asked to physicians are listed. At PC centers, 25% of unscheduled patients were considered to need an evaluation within 24 hours compared with 46% of nonurgent ED patients ($P < .001$). Concerning appropriateness of the healthcare level sought, 97% of PC patients were considered suitable for the healthcare level by their physicians compared with 47% of ED patients ($P < .001$). Because of this result, we did not explore the PC patients further.

Detailed Analyses of ED Patients

A total of 132 ED patients were included in more detailed analyses. Of those, we identified 60 ED patients who were considered to need medical treatment within 24 hours (high risk) and 70 ED patients who could have waited longer than 24 hours (low risk). Two patients had missing data: Moreover, we identified 62 ED patients who were considered to have chosen the appropriate level of care and 69 ED patients who were considered more suitable for PC.

To further analyze 130 ED patients with complete data, we categorized them in 2 groups. First, appropriate ED users were those assessed as either attending the right level or having high risk (78 patients [60%]). Second, inappropriate ED users were those assessed as both attending the wrong level and having low risk (52 patients [40%]).

All variables in Table 2 were analyzed relative to appropriate or inappropriate patient presentation at the ED (results of this grouping are available in eAppendix A). There were no significant differences between these groups regarding sex, country of birth, education level, marital status with children, or perception of symptoms as indicated by being anxious or troubled. Among patients considered inappropriate for the ED, the most common symptoms and signs at presentation were musculoskeletal (33%), and two-thirds reported symptoms for longer than 24 hours compared with one-half of the patients considered appropriate for the ED ($P = .02$). Patients considered appropriate for the ED were more often 40 years or older, more frequently had a free care card, and had greater regular previous healthcare use (eAppendix B available at www.ajmc.com).

In the multivariate analysis, after controlling for age, sex, and education level, we found that patients taking regular medication were more often considered appropriate for the ED (OR, 3.24; 95% CI, 1.07-9.8). Significant interaction between sex and regular previous healthcare use was found in the multivariate model, indicating that men with little regular previous healthcare use were particularly likely to have symptoms assessed as inappropriate for the ED ($P < .001$).

Assessment by Physician Characteristics

Physician assessment was not significantly influenced by age, affiliation, or experience (eAppendix C available at www.ajmc.com). More experienced physicians at the ED tended to more often consider their patients appropriate for the setting.

DISCUSSION

This study shows that most unscheduled patients seeking PC were considered to have chosen a suitable level of care, whereas 52 of 130 nonurgent ED patients were considered inappropriate for the chosen setting. Except for sex, no differences in sociodemographic characteristics were found between ED and PC patients, but clinical presentation of symptoms and regular previous healthcare use were different. Patients assessed as inappropriate in the ED had little regular previous healthcare use. Physician evaluation was not significantly influenced by age, affiliation, or clinical experience. Compared with general practitioners, ED physicians were younger and less experienced.

Contrary to previous studies^{4,18} of inappropriate ED attendance, patients with little regular previous healthcare use (as opposed to frequent attendees) comprise the bulk of those considered inappropriate. Our study provides no information about why this group chose the ED for complaints that might be more suitable for PC besides their own perception of urgency. It seems that the frequent regular healthcare user has adequate knowledge about the healthcare system and about what would be an appropriate healthcare level, whereas such information is not as likely to reach or interest healthy populations who rarely seek care.

In contrast to physicians at the ED, general practitioners agreed with the choice of healthcare level among their patients to a greater extent. Lack of knowledge among ED physicians regarding available PC resources, together with short professional experience, may explain why they considered many nonurgent ED patients as inappropriate for the setting.

A potential effect when physicians evaluate symptoms and signs of their patients as being inappropriate for the facility is that their attitudes may negatively affect behavior toward their patients.^{1,19} Moreover, physician opinion does not always correlate with patient outcome. It has been suggested that physician opinion can adversely affect patient outcome and future healthcare utilization.^{11,20,21} Perhaps because of their mission, perceptive physicians specializing in emergency medicine have been found to be more receptive to patients with minor disorders at the ED than other ED physicians.^{5,7,22} It has been shown that physicians display more respect for older patients and for patients they know well,²³ which may

explain why 97% of PC physicians herein found their patients appropriate.

A major strength of this study is that it was based on patients from a well-defined source population within a geographic area served by PC centers. Performing this study during office hours, when most alternative medical services are available, and in a healthcare system in which all inhabitants are covered by national health insurance made it possible to identify other important contributing factors behind health-seeking behavior besides access to care and lack of PC providers, which were found to be important in similar investigations that included visits outside of office hours.²⁴ Studies²⁵⁻²⁷ in the United States also support our findings that neither lack of PC, absence of insurance, nor time of day or night drives patients to the ED but rather current health and clinical presentation of symptoms. Detailed immediate structured face-to-face interviews with patients, together with self-administered physician questionnaires, all with a high proportion of completeness, enabled us to minimize the risk of information bias.

Our study has several limitations. This study does not determine whether physician evaluation reflected knowledge or concern about a patient because of high regular previous healthcare use per se or whether it reflected a situation in which the patient actually experienced more severe symptoms. From our study, it is unknown if patients considered inappropriate at the ED would be considered appropriate in PC by general practitioners. However, such a design was unfeasible because of ethical and logistic concerns. A study in which ED physicians evaluated PC patients was also impossible to perform.

There was an 11% lower response rate among physicians at the ED compared with the PC centers, but overall the response rate was reasonably high. We have little reason to believe that this difference relates to outcomes; therefore, the potential effect on our results would be minor.

Interrater reliability among the 19 interviewers was not evaluated. It is unlikely that this would have caused any major response biases because the interview protocol was completely structured and without open-ended questions. The interviewers also had to pass an extensive training course before recruitment.

Finally, among all 1097 patients attending the ED from the catchment areas during the study, we have background and triage information only for patients meeting the inclusion criteria (ie, those with lowest medical risk). It would have been advantageous to obtain this information for all patients to assess whether inappropriate use of the ED after a decade of constraints in hospital ED services constitutes an organizational problem. Nevertheless, this study contributes information about how this group of nonurgent patients was perceived by physicians.

CONCLUSIONS

In this study, patients with disorders that ED physicians considered inappropriate for the setting had little regular previous healthcare use but were also managed by less experienced physicians compared with patients in PC. General practitioners agreed with the choice of healthcare level among their patients to a large extent.

The perception of urgency might vary both within and between groups of individuals receiving medical care. However, because emergency care organizations have limited resources, continuous evaluation of how to best direct information concerning appropriate healthcare use is needed for sustainable service. Targeting information about appropriate use of medical services to different subpopulations is one solution to the ongoing disagreement about urgency between patients and physicians. Further studies should investigate how to better disseminate medical information to healthy populations. Developing closer collaborations between PC and ED physicians might benefit inexperienced physicians in terms of medical education and communication skills. Most important is to meet patient demands and concerns in a professional way and to develop organizational ways to manage patient needs that are suitable for the setting.²⁸

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