

The Length of Waiting for First Visit and Disposition in Emergency Department in Tabriz Imam Reza Hospital

Tabriz İmam Reza Hastanesi'nde hastaların acil serviste ilk görülme ve bekleme süreleri

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SUMMARY

Objectives: Establishment of emergency medicine specialty in Tabriz in October of 2006 made a big fundamental revolution in the quality of medical service in the general hospital of Imam Reza. Each patient who comes to emergency department after triage, visited by an intern and a resident of emergency medicine (EM) and decision about their disposition following necessary medical care is made. In this study we aimed to show the promptness of first visits and length of stay of patients in the emergency department.

Materials and Methods: Randomized day or night visits from 20 March up to 20 June 2008 to emergency department were included in the study. Then the length of emergency department stay from admission to leaving emergency department, length of delay to first visit by a resident of EM and the consultants were recorded.

Results: A total of 4.550 patients were included in the study. All patients were visited by EM residents and 80% of patients visited only by EM residents and an attending physician. The mean length of waiting time for the first visit and the mean length of emergency department stay were 11.6±14.8 min and 183.6±409.5 respectively. The consultation rates with infectious disease, internal medicine, neurology, neurosurgery, general surgery and ENT was 0.9%, 3.5%, 6.3%, 6.2%, 7.7% and 0.3%, respectively.

Conclusion: Although emergency medicine is a toddler and there is insufficient number of residents to serve the patients in Tabriz, residents can still visit patients in a few minutes. The length of time for the first visit is short and majority of the patients were seen both by a resident and an attending physician.

Key words: Emergency medicine; length of waiting.

ÖZET

Giriş: Tabriz'de 2006 yılında acil tıbbın kurulması İmam Rıza Hastanesi'nin tıbbi hizmetlerinin kalitesinde kökten bir değişiklik meydana getirdi. Acil servise triyaj sonrası giren hastalar, önce intörnler, daha sonra da asistanlar tarafından görülmektedirler. Bu çalışmadaki hastaların hekimler tarafından ilk görülme sürelerini ve acil serviste bekleme sürelerini belirlemeyi amaçladık.

Gereç ve Yöntem: 20 Mart 2008 ile 20 Haziran 2008 tarihleri arasında acil servise gece ve gündüz shiftlerinde başvuran tüm hastalar çalışmaya alındı. Hastaların acil serviste kalış süreleri, hekim tarafından ilk görülme süreleri ve konsültasyon istenenler bölümler kaydedildi.

Bulgular: Çalışmaya toplam 4550 hasta alındı. Tüm hastalar bir asistan tarafından ve hastaların %80'i bir asistan ve uzman tarafından görülmüşlerdi. Acil serviste bir hekim tarafından görülme süreleri ve acil serviste bekleme süreleri sırasıyla 11,6±14,8 ve 183,6±409,5 dakikaydı. Enfeksiyon hastalıkları, dahiliye, nöroloji, beyin cerrahi, genel cerrahi ve kulak burun boğaz bölümlerinden istenen konsültasyon oranları sırasıyla %0,9, %3,5, %6,3, %6,2, %7,7 ve %0,3'tü.

Sonuç: Acil tıp Tebriz'de yeni yapılanmasına ve asistan sayısının yetersizliğine rağmen hastalar acil servise girdikten sonra birkaç dakika içine bir hekim tarafından görülmektedirler. Hastaların hekim tarafından ilk görülme süreleri kısa olmaları birlikte, büyük bölümü bir uzman tarafından da görülmektedir.

Anahtar sözcükler: Acil tıp; bekleme süresi.

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Introduction

Much of the training and education of emergency medicine (EM) residents involves direct patient care in the emergency department (ED) setting, where faculty physicians provide resident supervision by reviewing residents' history taking and physical examinations, discussing treatment options, and assisting with procedures. It is not clear how EM residents affect ED efficiency. On one hand, DeBehnke has argued that the presence of residents in the ED increases faculty staffing requirements.^[1] However, Knickman and colleagues point out that resident education and service may occur simultaneously^[2] and thus, residents might actually save time by contributing to ED work flow.

Emergency department (ED) overcrowding is a worldwide problem that is important because it might decrease quality of care. During the last several years, it has been reported prominently in European,^[3] North American,^[4] and Australian media.^[5] In addition, published surveys of American ED directors indicate that there is frequent overcrowding in most of their EDs,^[6,7] These surveys and several editorials^[8-11] in major emergency medicine journals suggest that ED congestion is a "national crisis"^[8] because it interferes with the delivery of effective and timely emergency medical care. These concerns are supported by at least one study indicating that quality of care decreases when the ED is overcrowded.^[12] Although there are few studies determining the causes of ED overcrowding, many believe that hospital overcrowding is an important contributor.^[6-9,11,13,14] Hospital overcrowding can be measured by its occupancy, which is the number of patients divided by the number of available beds. Bed availability might influence emergency services in several ways.

When hospital occupancy exceeds a threshold, patients admitted through the ED may not have immediate access to hospital beds. These patients may then have to wait in the ED, thus creating a backlog.

Establishment of emergency medicine specialty in Tabriz in October of 2006 made a big fundamental revolution in the quality of medical service in general hospital of Imam Reza. Each patient who comes to emergency department after triage, visited by an intern and a resident of emergency medicine and decision about their disposition following necessary medical care is made.

In this study we want to show the promptness of first visits and length of stay in the ED.

Materials and Methods

Study Design: This was a randomized retrospective study of two administrative databases to examine the length of first visit and the length of ED stay.

Study Setting: Randomized day or night visits from 20 March up to 20 June 2008 to emergency department were included into the study. Then the length of ED stays from entering up to leaving ED, length of delay to first visit by ED residents and consultants were recorded.

Databases Used for the Study: We used two administrative databases for the study. The Emergency Patients Information System (EPIS) records the date and time of registration for each ED visit. Patients are registered as soon as they enter the department allowing to determine the registration times when they arrived. After the patient leaves the ED, specially trained health records analysts complete the EPIS database by over viewing from the ED records on patient care information, including whether a consultation was performed. We also used the hospital's Admitting Data Management System (ADMS), which records the number of beds available and occupied on a daily basis as well as the time that patients are transferred from the ED into the hospital. We linked these two databases and used as a common unique patient identifier to determine which ED patients were admitted to the hospital as well as the time transferring admitted patients from the ED to the hospital ward.

Because of the existence of cardiology, pediatrics, orthopedics and gynecology centers in Tabriz, all patients with such chief complaints refer to those centers.

In this study we could only consult with internal medicine (Gastroenterology, Respiratory Disease, Endocrinology, Nephrology and Rheumatology), neurology, neurosurgery, general surgery, urology and infectious disease departments.

Data: Length of first visit was calculated from registration until the visit by first emergency medicine residents or physicians. The length of ED stay was calculated from registration up to discharge time or admitting time to hospital wards which is documented by emergency physicians. The consultations were also recorded.

Data Analysis: All data were analyzed in SPSS 15.0. Rates, mean±standard deviation and median were used in order to present the descriptive data.

Table 1. Numbers of patients needed consultation.

| Consulted services | Patients n (%) |
|----------------------|-------------------|
| Infectious disease | 40 (0.9) |
| Internal | 160 (3.5) |
| Neurology | 285 (6.3) |
| Neurosurgery | 280 (6.2) |
| Surgery | 350 (7.7) |
| Ear, nose and throat | 15 (0.3) |

Results

A total of 4,550 patients were included to this study. All of these patients visited by the emergency medicine residents and 80% of patients were visited by both emergency resident and an attending physician.

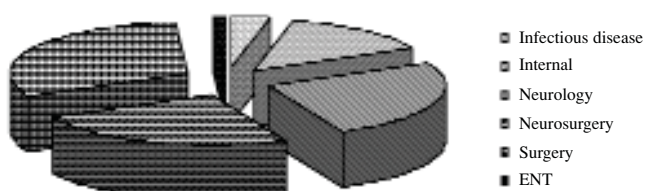
The average age of patients was 42.9±21.5 years old. 48.1% (n=2190) of patients were female and 51.9% (n=2360) were male. The mean length for first visit was 11.6±14.8 min (median=7). The mean of ED stay was 183.6±409.5 min and the management of most of the patients were resulted in 70 min (median=70). 24.9% of the patients were consulted by other departments (Table 1, Fig. 1).

All of the patients which had urology chief complaint were managed only by emergency medicine physicians and residents and referred to urology clinic as outpatient cases.

Discussion

The effect of increased length of stay for admitted patients upon care in the ED is unknown. Few studies regarding quality of care related to the duration of ED stays have found that prolonged ED stay is associated with decreased patient satisfaction,^[15] and increased hospital charges.^[16] However, to the best of our knowledge, there are no studies evaluating outcomes of care.

Some have argued that trainees lead to decreased ED efficiency. DeBehnke et al.^[17] used the number of patients seen/hour and LOS as a measure of resident productivity

**Fig. 1.** Percentage of consultations by the other departments.

and efficiency. Internationally, Salazar et al.^[18] found that length of patient stay, ancillary testing, and number of patients leaving without being seen decreased during a resident strike in Spain. In France, Gerbeaux et al.^[19] evaluated the effect of medical students on ED LOS, comparing times before and during a medical student strike. They found that medical students' presence increased LOS for all patients by an average of 31 minutes. Chan and Kass^[20] studied the effect of medical students on ED throughput times, and stated that "patients who are evaluated by the medical students 'move through the system' more slowly than those cared for solely by the more experienced health care providers."

Yet others have found that residents do not negatively impact ED operations and efficiency. McNamara and Kelly^[21] assessed the impact of residents on the presence of predetermined criteria in the medical record as a measure of the quality of care. Sexton et al.^[22] compared the numbers of ancillary tests ordered on patients before and after the institution of an EM residency study, and found no difference in testing. Using a similar study design, McNamara and Kelly^[23] found that residents did not increase cost of care in the ED.

A factor that may impact efficiency in the teaching ED is the amount of time those faculties spend supervising and teaching, instead of rendering primary patient care themselves. Although residents must assume progressively greater responsibility and autonomy as they progress through their training, it is still a delicate balance for faculty to provide the appropriate level of resident supervision. With inadequate direction, patients under residents' care may wait longer and receive suboptimal care from less experienced physicians. Resident education may also suffer. Conversely, too much supervision might diminish residents' educational experience and growth, and lead faculty less time for primary patient management, potentially increasing LOS. In studying the issue of house staff supervision, Sacchetti et al.^[24] concluded that supervision was necessary for all cases, even at a PGY-2 level of training. Holliman et al.^[25] found the non-EM house staff required even greater supervision than did EM residents.

We feel that the lack of association between hospital occupancy and consultation or admission rates is also important. Queuing theory in economics states that increased queue length will result in some people's spontaneously leaving the queue and thereby lead to service rationing.^[26] Although

this may be an appropriate method to ration nonessential services, it is likely inappropriate in the ED.

Although the use of administrative data allowed us to study a large number of ED visits over a seven-year period, it also caused several limitations. First, we could include only variables captured in the database routinely and throughout the study. For example, we could not adjust for the average daily triage score because it was not available for the entire study period. Second, we could not study time intervals other than the ED length of stay for admitted patients.

Analysis of other time intervals, such as the delay between the time when a decision for admission was made and the time of arrival to the ward were not determined. It would not be valid in our case because physicians do not always record the decision times accurately. Our definition captured the total duration of a patient remains in the ED, which is more relevant to creating an overcrowded ED than just the time he or she is waiting for a bed. Third, we studied some variables that we know were not coded 100% accurately, for example, the consultation rate. Moreover, some consultations may have been for purposes other than admission. We justified inclusion of this variable as an outcome because it is unlikely that there was systematic misclassification; and the findings based on its analysis are consistent with those using the more objective outcome, admission rate. All the other variables used in the analysis were accurate and complete because they were objective.

Conclusion

Although emergency medicine is a toddler and there is insufficient number of residents to serve the patients in Tabriz, residents can still visit patients in a few minutes. The length of time for the first visit is short and majority of the patients were seen both by a resident and an attending physician.

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