

Emergency Departments in the Health Care System

Use of Services in California and the United States

November 2002

Background

Twenty-four hours a day, seven days a week, hospital emergency departments (EDs) play an essential role in the health care delivery system, treating patients with a wide array of health problems, ranging from stomach and chest pain to gunshot wounds and traffic accidents.

There is, however, growing concern at both the state and national levels that emergency departments are becoming overcrowded and financially unstable, due to factors ranging from soaring patient demand and higher acuity to chronic under-funding and other economic constraints.

Emergency departments, along with physicians' offices and hospital outpatient departments, are one of three main sources of ambulatory care for California health care consumers. While EDs provide a relatively small percentage of all ambulatory visits, the reasons consumers access these services are important in understanding the role of the ED and whether emergency services are being used in a cost-effective way.

Reimbursement, staffing, inpatient capacity, and other factors all have an impact on overall ED capacity, and suggest a complex series of issues in exploring the financial and operational

performance of California's hospitals and emergency departments.

Methodology

This brief is based on a study commissioned by the California HealthCare Foundation and conducted by the USC Center for Healthcare Financing, Policy & Management. It is the third in a comprehensive series of briefs published by the California HealthCare Foundation on the capacity, use, and financial performance of the state's emergency departments.

The study used data from two primary sources. For California, the study tapped hospital data from the Office of Statewide Health Planning & Development (OSHPD) from 1999 and 2000. In addition, the study combined edited data on EDs in California with national data published in the years 1997 through 1999 by the National Center for Health Statistics, which are based on a sample of hospitals participating in the National Hospital Ambulatory Medical Care Survey (NHAMCS). In all cases, the data were the most recent available at the time of the study.

The study sought to answer a series of questions on how emergency departments fit into the overall health care system — who uses emergency services, why patients go to the ED, and what

kinds of services they receive. Specific utilization data include:

- The relative importance of EDs within the ambulatory care delivery system;
- The characteristics of ED users, including age group use rates, arrivals by ambulance, the severity of ED patient illness or injury, and inpatient admission rates;
- The conditions and complaints that drive patients into the care system;
- The types of diagnostic and treatment services provided;
- The comparison between California ED statistics and national data.

California hospitals have three types of emergency departments:

Standby. Hospital maintains a designated area for emergency services, but a physician is on-call only;

Basic. Hospital has physician and staff on duty at all times for urgent medical problems;

Comprehensive. Hospital has in-house capability for managing all medical conditions on a definitive and ongoing basis. This is typically associated with a large tertiary and/or academic medical center, with specialty programs such as burn centers and psychiatric units.

The types of visits to emergency departments fall into three broad categories:

Critical. Acute injuries or illnesses that could result in permanent damage, injury, or death without immediate intervention, such as head injuries, vehicular accidents, and gunshot wounds;

Urgent. Acute injuries or illnesses where loss of life or limb is not an immediate threat, such as broken bones or lacerations;

Non-urgent. Relatively minor injuries or illness, such as toothaches or colds.

Major Findings

Nationally—and by inference in California—emergency departments provide only a relatively small portion of overall outpatient services, but they must be ready to handle everything from headaches to traumatic, life-threatening injuries. They provide a wide range of services and an intense concentration of resources.

Statewide, the per capita use rate of emergency services is slightly lower than national averages, and has dropped somewhat since 1990. Use rates nationwide are highest among elderly patients, while ED usage among children under 15 years of age has declined over time and is now slightly lower than that of the overall population. Patients at California emergency departments also are substantially sicker than those at EDs nationwide, and California ED patients are admitted to the hospital at rates slightly above those of the nation.

The Role of the ED in Ambulatory Care: Modest Size, Vital Work

Ambulatory services are provided in physician offices and hospital outpatient departments, as well as in hospital emergency departments.

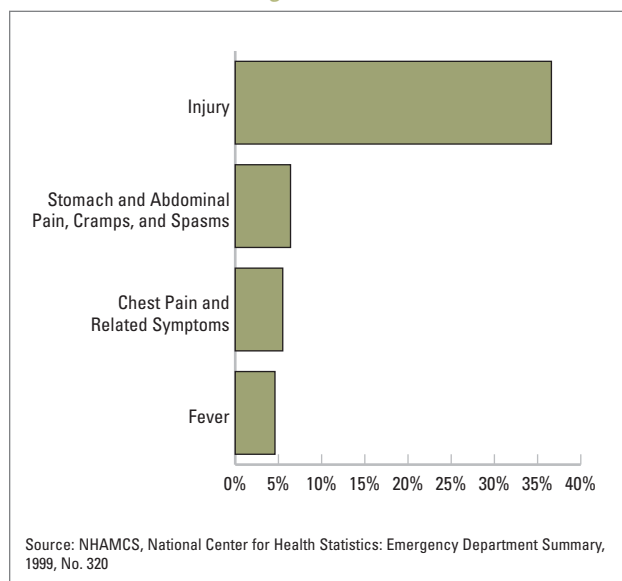
According to 1997 data, nationally, health care consumers averaged 3.6 ambulatory visits per person, per year to all sources. Physicians' offices were the predominant delivery site, accounting for 82 percent

of all ambulatory care visits. Hospital outpatient departments accounted for 8 percent of total visits, while emergency departments received about 10 percent of all ambulatory care visits. In California, emergency departments handled 9.7 million visits in 2000.

Patients Use EDs for a Wide Variety of Medical Conditions

Emergency departments provided treatment for a broad range of injuries and medical conditions.

Figure 1. Principal Reasons for ED Visits as a Percentage of Total ED Visits



Accidents and injuries were the primary reasons that people sought emergency department services, accounting for more than one-third of all ED visits. EDs were not, however, the first choice for patients suffering an injury; nearly two-thirds of all patients with injuries went directly to a physician for treatment, while only 28 percent sought care in an emergency department. Stomach and abdominal pain accounted for 6.4 percent of all ED visits, followed by chest pain at 5.5 percent, and fever, at 4.6 percent.

Because injuries and accidents are such an important cause of ED visits, it is important to understand the various injury sources. Overall, 80 percent of all injury-related ED visits were unintentional in nature. Some 20 percent were from falls, another 11 percent from motor vehicle accidents.

About 30 percent of injury-related ED visits occurred in the home. For the elderly, that percentage rose to 47 percent. Intentional injuries, including self-inflicted injuries, accounted for 5 percent of all injury-related ED visits, while medical errors, or injuries termed as adverse effects of medical treatment, totaled 3.7 percent of all visits.

Not surprisingly, 49 percent of all patients with open wounds, and 48 percent of those with contusions or bruises, turned to emergency departments for treatment. In addition, 41 percent of patients diagnosed with chest pain chose the ED for treatment. Abdominal pain, fractures, and back sprains also are conditions for which a high percentage of patients sought ED care. These diagnoses accounted for almost one-fifth of all ED visits.

EDs Offer a Wide Range of Services, Higher Resource Intensity

Emergency department personnel must rapidly screen and assess patients' medical needs — often without access to patient histories or records, which may contribute to higher costs and resource use in EDs. In comparing overall services rendered in physicians' offices with those in emergency departments, ED resource usage was substantially greater.

Blood pressure was taken for fewer than half of patients in doctors' offices, compared with 72 percent in EDs. A complete blood count or other blood test was ordered for roughly one quarter of all ED patients, while another one-fifth received pulse oxymetry. About 15 percent of all ED patients had a chest x-ray, urinalysis, or EKG; approximately 11 percent received other x-ray services. Overall, the diagnostic imaging procedures of EKGs and x-rays were performed at five times the rate in an ED than in a physician's office, while CT scans and MRIs were done in EDs at four times the rate performed in doctors' offices. These figures may not reflect regional variation in medical practice.

Emergency department patients received 2.6 diagnostic or screening services per visit, or roughly 252.7 (based on 1999 data) screenings per 100 visits. A procedure was performed for roughly every other ED patient, or 47.6 per 100 visits. A total of 11 percent of ED patients received no diagnostic tests or screening services.

Among those ED patients who received further care, the most common procedure was IV therapy, followed by wound care and orthopedic services. Overall, no procedures were performed on 57.5 percent of patients.

Medications were used in 73 percent of all ED visits, with a drug mention rate of 1.6 per visit. From 1992 to 1999, the number of drug mentions increased 34 percent, based on a maximum of five drugs. Pain medications were the most common drugs prescribed.

Within the ED setting, patients saw a physician 94 percent of the time, similar to the 97 percent rate in a physician's office.

Of interest during the current nursing shortage, however, is that a registered nurse was seen in 87 percent of all ED visits compared to only 14 percent of physician office visits, where less costly medical/nursing assistants and licensed practical nurses were used at a higher rate. ED patients also were somewhat more likely to be seen by a greater variety of personnel, including emergency medical technicians and physician assistants.

Emergency Department Usage and Patient Demographics

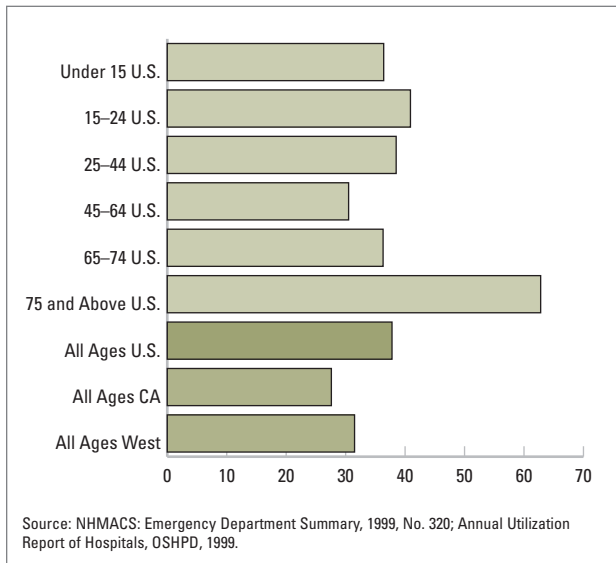
Nationally, 37.8 ED visits were made for every 100 persons in 1999. Over the eight-year period of 1992 to 1999, use rates increased 6 percent, due in part to an increase in the average patient age.

In California, ED use rates declined in that same time period, from 30 visits per 100 persons in 1992 to 27.6 visits per 100 persons in 1999. Taking into account California's 1999 through 2000 ED volume increases, the 2000 ED use rate rose only slightly, to 27.8 visits per 100 persons.

Geographic variation does not appear to be the sole basis for the differences between California and national figures. The ED usage rate was lower for California than the Western United States as a whole, which logged 31.5 visits per 100 persons.

From the standpoint of national use rates by age group, those 75 years of age and older posted the highest utilization rates, at 62.8 ED visits per 100 persons. Countering the conventional wisdom that EDs are a primary source of care for children, the ED use rate for those less than 15 years of age was 36.4 visits per 100 persons, somewhat lower than the overall population.

Figure 2. Who Uses the Emergency Department?
ED Visits Per 100 Persons By Age Group



The vast majority of ED patients were able to reach the hospital via car or other modes of transportation. Only 13 percent of ED patients arrived by ambulance. ED patients arrived in a fairly constant stream between 8 a.m. and midnight, with the peak times being late afternoon and early evening. Fewer than 10 percent of visits took place in the hours between 4 a.m. and 8 a.m.

System Capacity and Patient Illness Levels: Potential Pressure Points

California's emergency departments are slightly busier than their counterparts nationally—and their patients appear to be sicker. In 1999, the mean weekly volume among California EDs was 492 visits, compared to 426 nationally, although this comparison does not control for the size of the EDs.

In 1999, 64 percent of patients in California EDs were classified as urgent or critical, compared with 47 percent nationally. In the California figures, about 13 percent of patients were critical, requiring a doctor's attention

within 15 minutes, and 51 percent were urgent, requiring a doctor's attention within one hour. This compares to 17 percent of patients being critical and 30 percent urgent in national figures.

Slightly higher numbers of California emergency department patients were admitted to the hospital than those nationwide. Among national figures, there was no clear trend; inpatient admissions of ED patients peaked at 15 percent in 1997, but had fallen by 1999 to approximately 12 percent. In comparison, 14.2 percent of California ED visits resulted in admission.

Policy Implications of Emergency Department Utilization

Emergency departments represent a vital component of the ambulatory care system. Yet with four-fifths of all ambulatory care visits taking place in physicians' offices, EDs—at 10 percent of all outpatient visits—are not the primary delivery setting for outpatient care. Most patients seek care in physicians' offices for most medical problems requiring ambulatory care, including more than half of cuts and contusions, and the vast majority of other common complaints, such as back sprains, asthma, and heart disease. An important health care delivery policy question concerns whether EDs are being used cost-effectively in their role in the overall delivery system.

EDs operate around the clock and must be prepared to diagnose and treat a wider variety of patient needs than the typical physician's office. The average ED patient receives roughly three diagnostic or treatment services per visit. Compared to physicians' offices, EDs provide a higher level of resources, as measured both by the rates at which various diagnostic tests are ordered, and

by the higher number of and frequency of contact with providers. Moreover, the trend toward increased prescription drug utilization is of particular interest, given the rapid rise in pharmaceutical costs.

Additionally, it is impossible to determine the legitimacy and severity of ED patients' conditions, based on their complaints when they arrive. Thus, EDs must be recognized for the complexity of the role they play in the health care system and for the practical reality that the system depends on them to address virtually any patient concern, whether minor injury or major trauma.

Californians' ED use rates are considerably lower than their national or regional counterparts. The reasons for this are not clear. Active medical group and health plan oversight of unnecessary ED use may contribute to lower use, but there are counter considerations as well. For example, California's comparatively high rates of under- and uninsured residents would suggest higher ED use rates, since emergency departments are a key source of access for those lacking insurance or access to physician services. Further, use rates across age groups do not vary substantially, except for the elderly, and it does not appear that EDs are being used more heavily for pediatric primary care. ED patients are, for the most part, ambulatory, and able to get to the hospital without ambulance service.

The belief that ED use is driven by a "24/7" economy, or by patients seeking off-hours care when physicians' offices are closed, was not borne out by the data.

Nationally, ED volumes are relatively constant during the day and early evening hours and much lighter during the early morning hours.

As both a policy and practical matter, the system's capacity to accommodate patient volume is a fundamentally important consideration. Although California ED visit growth lags behind that of the Western United States or the nation as a whole, a typical California ED sees 15 percent more patients weekly than its national counterpart; however, the state's EDs also may have larger capacities.

California ED patients appear to be somewhat more ill than ED patients nationally, which may be placing greater demands on the ED system. However, caution should be taken in interpreting these data, as it is not clear whether definitions of urgent and critical patients are consistently applied. More telling is California's higher percentage of ED visits resulting in inpatient admissions. Reimbursement, staffing, inpatient capacity, and other factors are involved, adding to the complexity of exploring the performance of hospitals and their EDs.

Although national ED use rates between 1992 and 1998 present a more compelling picture of a system under stress than the comparative California experience would suggest, the state's higher proportion of urgent visits and ED visits resulting in inpatient admission, in particular, offer insights into the demands being placed upon California EDs. Coupled with two subsequent years (1999 through 2000) of increased ED volume in California, the pressure on EDs in the state may be growing.

The level and degree to which these issues impact the economic and financial health of California's EDs must be better understood in order to determine what, if any, policy intervention is appropriate.